Feb. 13, 1940. W. B. POHLE 2,190,107

CIGARETTE AND METHOD OF MAKING THE SAME

Filed July 23, 1931

Fig. 1.

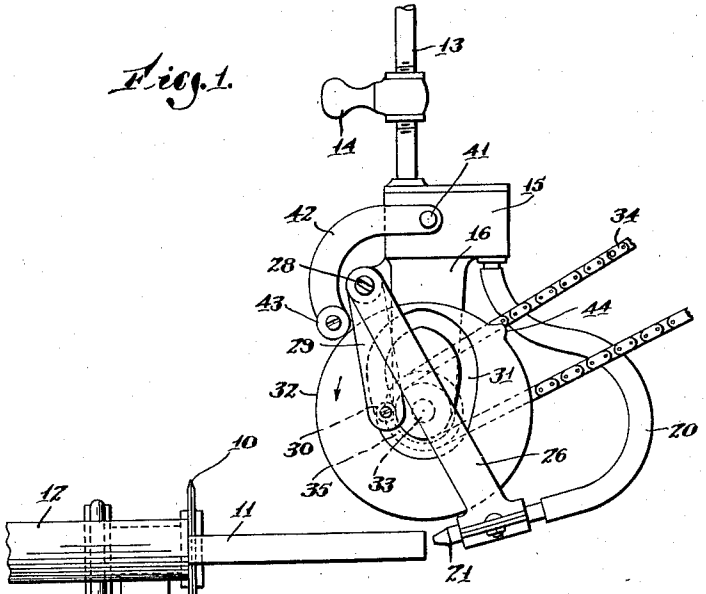
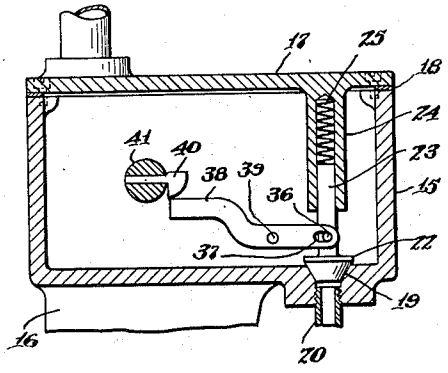


Fig. 3.



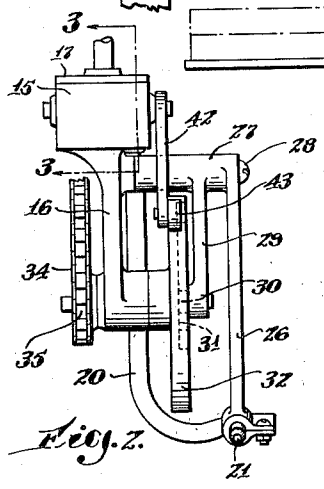


Fig. 2.

Fig. 4.

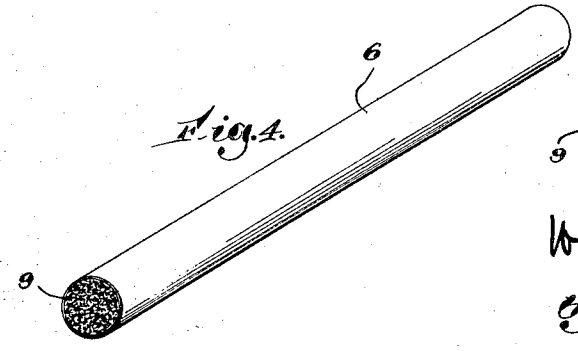
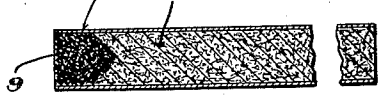


Fig. 5.



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Patented Feb. 13, 1940 2,190,107

UNITED STATES PATENT OFFICE

2,190,107

CIGARETTE AND METHOD OF MAKING THE SAME

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Application July 23, 1931, Serial No. 552,663

29 Claims. (Cl. 131—10)

The present invention relates to cigarettes.

Cigarettes usually comprise a paper wrapper and a tobacco filler. Some of this tobacco is so finely cut that it may be characterized as dust. This dust is drawn into the lungs through the throat and mouth during the act of smoking. It is this dust that irritates the smoker's membranes and causes coughing.

The principal object of the present invention is to produce a cigarette in which the dust is retained during the act of smoking.

To the accomplishment of this object, and such others as may appear hereinafter, the features of the present invention relate to certain methods, devices, combinations and arrangements of parts hereinafter described and then set forth broadly and in detail in the appended claims which possess advantages readily apparent to those skilled in the art.

The various features of the present invention will be readily understood from an inspection of the accompanying drawing illustrating the best forms of the invention at present known to the inventor, in which,

Figure 1 is a detail view in front elevation showing the relationship between the rod forming, cigarette cutting-off, and liquid injecting mechanisms,

Figure 2 is a detail view in left side elevation of the liquid injecting mechanism;

Figure 3 is a detail view in sectional elevation on the line 3—3, Fig. 2;

Figure 4 is a view in perspective of the cigarette, and

Figure 5 is a longitudinal sectional elevation of the cigarette.

In the embodiment of the invention illustrated in Figures 4 and 5, the cigarette 6 comprises a tubular paper wrapper 7 and a filler 8 composed of finely cut tobacco. As well known to those skilled in this art, the tobacco is so finely cut that dust therefrom enters the throat and lungs with the smoke and irritates the delicate membranes thereof. It is generally conceded that it is this dust and not the smoke that causes coughing. Moreover, considerable annoyance is caused by small particles of tobacco dropping into the smoker's mouth from the adjacent end of the cigarette.

In order to cake the tobacco at the mouth end of the cigarette and thus form a plug which prevents dust or other particles of tobacco from entering the smoker's mouth, I treat the tobacco at the mouth end of the cigarette with a gummy and waterproof or water resistant liquid. Preferably, though not necessarily, the liquid employed is collodion, i. e., a solution of gun-cotton, thinned by the addition of ether. The cigarette may be upended and the collodion applied to the fibres of tobacco at the mouth end face of the cigarette with a medicine dropper.

The thinned collodion penetrates the fibres of the tobacco under the physical power of imbibition. As the collodion is gummy each fibre of the tobacco containing the solution sticks to every other fibre it touches thus forming, when the collodion dries, a permanent and porous cake 9 plugging the mouth end of the cigarette. The ether thinner being volatile, quickly evaporates. The interstices of the tobacco in the cake are open for the passage of the smoke, but all the fibres in the cake, including small particles of tobacco and dust thereof, are bound together into an integer. The cake 9 also acts as a filter to prevent the passage therethrough of dust from the loose tobacco with the smoke therefrom. Thus the cake 9 prevents any loose tobacco from entering the smoker's mouth.

To economize in the cost of the cigarette 6, I propose to inject the caking solution into the fibres at the mouth end face of the cigarette during its manufacture. As is well known to those skilled in this art, cigarettes are cut, one at a time, by a cutting-off mechanism 10 (Fig. 1), from a rod 11 which comprises filler and wrapper material and which is progressively formed by a rod forming mechanism 12 which causes the rod to advance in the direction of its length. The liquid to be injected into the free end of the rod 11 is conducted through a pipe 13, provided with a shut-off valve 14, to a tank 15 carried by a bracket 16 forming part of the cigarette making machine. Normally, the tank 15 is closed by a cover 17, there being a gasket 18 interposed between the top of the tank 15 and the cover 17. The liquid flows out of the tank 15 through an opening 19 formed in the bottom thereof into a flexible conduit 20 connected at its lower end to a hollow needle 21. Normally, the opening 19 is closed by a valve 22 formed on the lower end of a stem 23 received in a blind chamber 24 depending from the inside of the cover 17. Interposed between the end of the chamber 24 and the upper end of the stem 23 is a coiled spring 25.

The needle 21 is clamped to the split bottom of an arm 26 depending from a sleeve 27 (Fig. 2) rotatably mounted on a stud 28 (Fig. 1) projecting laterally from the bracket 16. The sleeve 27 is provided also with an arm 29 having a roll 30 engaged with a cam path 31 formed in one face of a cam 32 secured to a stub shaft 33 rotatably mounted in the bracket 16. The shaft 33 is driven in timed relation to the cigarette cutting-off and rod forming mechanism 10 and 12, respectively, by a chain 34 passed around a sprocket 35 on the shaft 33.

With this construction, the needle 21 is oscil-

lated from the position shown in Fig. 1 in which it is spaced from the rod 11 to a position where it engages the filler material at the free end of the rod 11 issuing from the rod forming mechanism 12. As soon as this point of engagement is reached, the needle 21 is oscillated back to its Fig. 1 position, and since the shaft 33 is driven in timed relation to the cigarette cutting-off and rod forming mechanism, the needle 21 continues to engage the free end of the rod 11 as it further issues from the rod forming mechanism. During this backward movement of the needle in engagement with the free end of the moving rod 11, the valve 22 is withdrawn from the opening 19 momentarily and is then released to allow the compressed spring 25 to drive the valve 22 downwardly and thus force a quantity of liquid through the conduit 20 and the hollow needle 21 into the free end of the rod 11. When the rod has issued its intended extent from the rod forming mechanism 12 as shown in Fig. 1, the cutting-off mechanism 10 severs the cigarette from the rod and the needle 21 is in position to again be oscillated forward in timed relation to the operation of the rod forming mechanism. As stated above, the liquid penetrates the tobacco fibres in the free end of the rod under the physical power of imbibition, forming when dry the porous plug shown in Fig. 5.

To effect this operation of the valve 22, the stem 23 is provided with a lateral pin 36 which is embraced by a slot 37 formed in one end of a lever 38 pivoted at 39 from the tank 15. The other end of the lever 38 is engaged by a cam 40 secured to a rock-shaft 41 journaled on the tank 15. One end of the rock-shaft 41 is provided with an arm 42 having a roll 43 thereon arranged to ride on the periphery of the cam 32. The cam 32 is provided with a rise 44 which engages the roll 43 during the rotation of the cam 32 and operates, through the connection described, the valve 22.

Nothing herein explained is to be interpreted as limiting the various inventions in the scope of their application to use in connection with the particular apparatus or the particular mode of operation or both selected for the purpose of illustration and explanation. While the particulars of construction herein set forth are well suited to one mechanical form of the invention, it is not limited to these details of construction, nor to the conjoint use of all its features, nor is it to be understood that these particulars are essential since they, the liquid used, and the steps of the method disclosed may be modified within the skill of the artisan without departing from the true scope of the actual inventions, characterizing features of which are set forth in the following claims by the intentional use of generic terms and expressions inclusive of various modifications.

What is claimed as new is:

1. In a cigarette, the combination with a wrapper, of a filler, at least one end portion of which is impregnated with a coating material positioned wholly internally of the wrapper, said end portion and coating material constituting a porous plug the interstices of which are the direct resultants of the drying of the coating material.

2. In a cigarette, the combination with a wrapper, of a filler, at least one end portion of which is impregnated with a water resistant coating material positioned wholly internally of the wrapper, said end portion and coating material constituting a porous plug upon the drying of the coating material.

3. In a cigarette, the combination with a wrapper, of a filler, at least one end portion of which is impregnated with a water resistant coating material positioned wholly internally of the wrapper, said end portion and coating material constituting a porous plug the interstices of which are the direct resultants of the drying of the coating material.

4. In a cigarette, the combination with a wrapper, of a filler comprising loose tobacco, an end portion of said filler being impregnated with a water resistant coating material, positioned wholly internally of the wrapper, which coacts with said end portion to form an intersticed cake serving as a plug for the mouth end of the cigarette.

5. In a cigarette, the combination with a wrapper, of a filler comprising loose tobacco, each fibre in at least one end portion of which is provided with a water resisting coating material the inherent properties of which cause it to bind the fibre to every other fibre it touches to form an intersticed plug, and said coating material being positioned wholly internally of the wrapper.

6. In a cigarette, the combination with a tubular wrapper and a porous cake therewithin closing the mouth end of said wrapper, said cake consisting of tobacco fibres impregnated with a binding material the inherent properties of which cause it, upon setting, to leave interstices among the tobacco fibres bound, and there being no binding material upon the exterior of the wrapper, of a filler of loose tobacco interposed between the cake and the other end of the wrapper.

7. That improvement in the art of making cigarettes which consists in applying to the loose tobacco adjacent at least one end of the cigarette a caking material which binds the tobacco fibres into an intersticed plug, said caking material being applied wholly internally of the wrapper.

8. That improvement in the art of making cigarettes which consists in collodionating the fibres of at least one end portion of the filler of the cigarette, the collodion being applied wholly internally of the wrapper.

9. That improvement in the art of making cigarettes which consists in treating the fibres of at least one end portion of the cigarette, wholly internally of the wrapper thereof, with ether thinned collodion.

10. That improvement in the art of making cigarettes which consists in forming a rod, treating a portion of the free end of the rod to form an intersticed tobacco cake in said portion, and then cutting a cigarette from the rod.

11. That improvement in the art of making cigarettes which consists in applying to the loose tobacco adjacent at least one end of the cigarette, wholly internally of the wrapper thereof, a caking solution, including a volatile agent, which coacts with the tobacco fibres to form an intersticed plug upon the evaporation of the agent.

12. That improvement in the art of making cigarettes which consists in forming a rod, treating a portion of the free end of the rod, wholly internally of the wrapper thereof, to form an intersticed tobacco cake in said portion, and then cutting a cigarette from the rod.

13. That improvement in the art of making cigarettes which consists in forming a rod, treating a portion of the free end of the rod with a coating substance which coacts with said end

portion to form a porous tobacco cake the interstices of which are the direct resultants of the drying of the coating substance, and then cutting a cigarette from the rod.

14. That improvement in the art of making cigarettes which consists in forming a rod, treating a portion of the free end of the rod, wholly internally of the wrapper thereof, with a coating substance which coacts with said end portion to form a porous tobacco cake the interstices of which are the direct resultants of the drying of the coating substance, and then cutting a cigarette from the rod.

15. A cigarette in which the fibres of tobacco at an end thereof are adhesively bonded to each other by a water resistant binder positioned wholly internally of the wrapper and in which the voids between said fibres are approximately as open and free as though the binder were not present.

16. A process of treating the tobacco strands in a cigarette, comprising making a solution including a binder and a solvent for holding the same in solution, coating the tobacco strands at an end of a cigarette with this solution and permitting the solvent to evaporate by itself to cause the binder to unite said strands of tobacco with pores therebetween.

17. The art of treating the strands of tobacco in an end of a cigarette, comprising delivery upon and through said strands of a volatile solution of a coating substance having a strand-binding property.

18. The method of treating cigarettes having thin strands of tobacco rather loosely confined in an outer substantially cylindrical wrapper, which comprises impregnating the individual discrete strands of tobacco inside of one end of the wrapper with a coating including a binder carried by a solvent, and evaporating the solvent so that the binder is deposited in a thin, substantially continuous sheath upon the individual strands of tobacco at the points where they cross or contact each other, whereby the interstitial spaces between the strands of tobacco at the treated end of the cigarette remain open and the strands are bonded to each other through the medium of the thin deposited sheath so as to prevent the strands from falling from the cigarette during smoking of the same.

19. A cigarette containing a filler of tobacco at least one end of which has deposited on substantially the tobacco portion only thereof a coherent, naturally-formed, thin, air-pervious screen of a film-forming substance, said substance being collodion, whereby shreds of tobacco at that end are kept in an adhering condition relative to each other and from shedding from said end and the openings therebetween are of sufficient size to permit smoking of the cigarette without puncturing the film.

20. As a new article of manufacture, a plain or non-tipped cigarette comprising a wrapper, a tobacco filler consisting of relatively fine cut particles, and a water resistant binder located wholly internally of the wrapper, one of the exposed surfaces of the tobacco filler being caked by adhesive contact between touching particles by reason of said binder being located on said particles, said surface being relatively porous to maintain substantially normal draught through the cigarette..

21. A cigarette consisting of a wrapper, a tobacco filler, and a water resistant cellulosic binder, the fibres of at least one end of the filler being held in a conjoined mass by said cellulosic binder, and said mass being substantially as porous as the remainder of the cigarette.

22. That improvement in the art of making cigarettes and the like which consists in applying a quick setting adhesive to at least one end of the filler of a cigarette, said adhesive being in a thin liquid condition when applied to cause the liquid to follow the particles of filler inwardly and to penetrate them under the physical power of imbibition, and permitting the adhesive to set by itself to bind said particles together into a mass leaving the interstices between said particles substantially unobstructed.

23. That improvement in the art of making cigarettes and the like which consists in applying a quick setting adhesive to at least one end of the filler of a cigarette wholly internally of the wrapper thereof, said adhesive being in a thin liquid condition when applied to cause the liquid to follow the particles of filler inwardly and to penetrate them under the physical power of imbibition, and permitting the adhesive to set to bind said particles together into a mass leaving the interstices between said particles substantially unobstructed.

24. A cigarette in which the fibres of tobacco at an end thereof are adhesively bonded to each other with pores therebetween by a water resistant binder located wholly internally of the wrapper.

25. That improvement in the art of making cigarettes which consists in applying a limited quantity of a water resistant binder to the tobacco fibres exposed at an end face of a cigarette, said application being made in such manner that the binder substance is confined to a location wholly internal of the wrapper, thereby effecting the bonding to each other with pores therebetween of said exposed fibres and of such adjacent fibres of tobacco as the binder reaches by capillarity.

26. That improvement in the art of making cigarettes which consists in applying a limited quantity of a water resistant binder to the tobacco fibres exposed at an end face of a cigarette, said binder being applied wholly internally of the wrapper, and permitting the binder to set to bind said fibres to each other with the air spaces between them open and substantially unobstructed by the presence of the binder.

27. That improvement in the art of making cigarettes which consists in applying a limited quantity of a water resistant binder dissolved in a solvent to the tobacco fibres exposed at an end face of a cigarette by touching said fibres only at the central portion of said end face with a drop of said solution.

28. That improvement in the art of making cigarettes which consists in applying a limited quantity of a water resistant binder dissolved in a solvent to the tobacco fibres exposed at an end face of a cigarette by touching said fibres with the end of an applicator moistened with said solution, whereby substantially all the particles of tobacco at said end face are bonded to each other by said binder with pores therebetween and the binder is positioned wholly internally of the wrapper.

29. That improvement in the art of making cigarettes which consists in applying a limited quantity of a water resistant binder to the tobacco portion of an end of a cigarette, said binder being applied wholly internally of the wrapper.

WALTER B. POHLE.