Aug. 31, 1943. G. A. BETTS 2,327,991

CIGAR AND CIGARETTE

Filed April 28, 1938

Fig. 1.

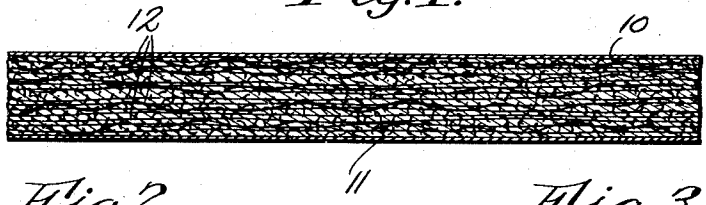


Fig. 2.

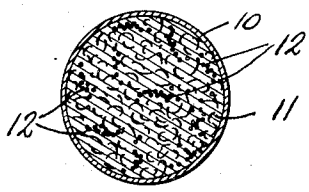


Fig. 3.

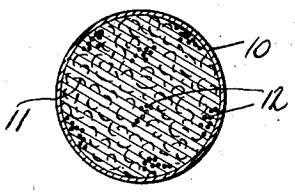


Fig. 4.

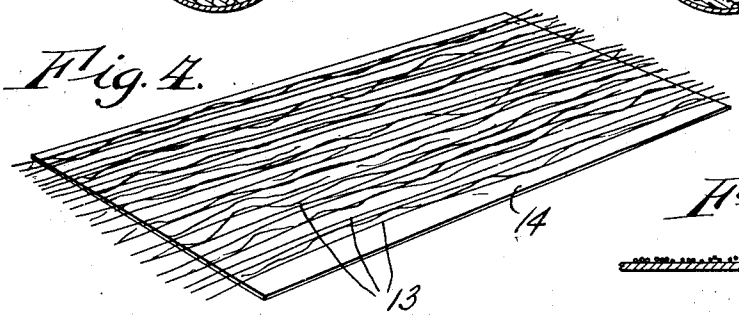


Fig. 5.

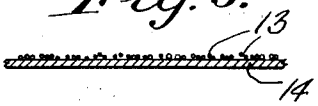


Fig. 6.

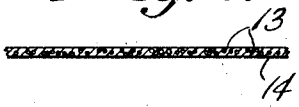


Fig. 7.



Fig. 8.

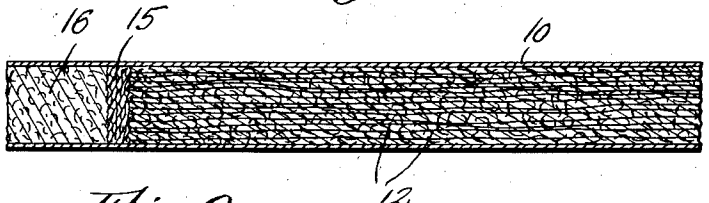
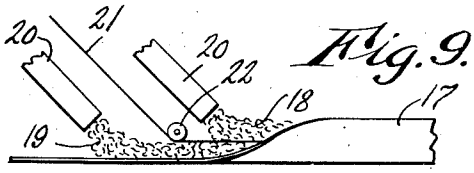


Fig. 9.



INVENTOR

Gilbert A. Betts

BY

Parker, Prichard & Farmer.

ATTORNEYS

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CIGAR AND CIGARETTE

Gilbert A. Betts, Buffalo, N. Y.

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21 Claims. (Cl. 131—4)

This invention relates to cigars and cigarettes. One of the objections to smoking is due to the falling of ashes from cigars and cigarettes upon clothing, tables, desks, rugs, furniture, floors, etc., particularly from lighted cigars and cigarettes, creating an unsightly appearance and with some danger from fire. Live ashes from cigars and cigarettes frequently fall on the clothing of the smoker, or upon rugs or upholstery, and burn holes therein. Ash trays are not always conveniently accessible to the smoker, and some smokers are careless about ashes from cigars and cigarettes and let them fall where they may.

One object of this invention is to provide an improved cigar or cigarette which, when smoked, will have increased adhesion between the ash particles on the burned ends thereof, so as to decrease the likelihood of the ashes falling off unintentionally; with which the tendency of the ash particles to adhere to one another and to the unburned portion of the cigar or cigarette may be increased or decreased as desired; with which the cost of the cigar or cigarette will not be materially increased; which cigars and cigarettes will have the normal appearance and smoking properties of the ordinary cigarettes and cigars; which will not be harmful or annoying to the smoker; which may be manufactured by the usual processes; and which will be relatively simple and inexpensive.

Another object of the invention is to provide improved cigars and cigarettes with which danger of injury by fire to the smoker's clothes and to upholstery and rugs from falling ashes will be lessened; with which the normal draft of the cigar or cigarette will not be materially decreased; with which the flavors and aromas in the cigars and cigarettes will not be materially lessened or modified; with which increased adherence of the ash particles to one another and to the unsmoked portion will be obtained, and with which danger of fire from discarded butts will be lessened.

Various other objects and advantages will be apparent from the following description of several embodiments of the invention, and the novel features will be particularly pointed out hereinafter in connection with the appended claims.

In the accompanying drawing;

Fig. 1 is a longitudinal sectional elevation through a cigarette made in accordance with this invention;

Fig. 2 is a transverse sectional elevation through the same, and illustrating one arrangement of the glass wool fibers therein;

Fig. 3 is a similar transverse sectional elevation through a cigarette also made in accordance with this invention, but with the fibers in a slightly different arrangement in the tobacco;

Fig. 4 is a perspective of a section of a cigarette paper having glass wool fibers attached thereto before the fibers are cut off at the end of the section, and which may be used to wrap tobacco to form a cigarette;

Fig. 5 is a transverse sectional elevation through the sheet of Fig. 4;

Fig. 6 is a transverse sectional elevation through part of a sheet of cigarette paper, having glass wool fibers incorporated in the body of the paper sheet and illustrating still another embodiment of the invention;

Fig. 7 is a perspective illustrating the wrapping of tobacco in a sheet such as shown in Fig. 4 and illustrating how the tobacco may be wrapped to form a cigarette in continuous strips;

Fig. 8 is a longitudinal sectional elevation through another cigarette also constructed in accordance with the invention and illustrating another embodiment of the invention in which a stop plug is interposed between the ends of the cigarette; and

Fig. 9 is a diagrammatic illustration illustrating how the glass wool fibers in the form of yarn or webs can be incorporated in the body of the cigarette while the cigarette is being formed by a continuous process.

Referring first to Figs. 1 and 2, the cigarette there illustrated includes a rolled paper or wrapper 10 having a mass 11 of tobacco rolled or incorporated therein as usual in cigarettes, and also having incorporated therein a plurality of very fine glass, vitreous or similar non-combustible, synthetic, mineral wool fibers 12 which preferably progress in a direction from end to end of the tobacco mass. These synthetic mineral wool fibers may also be designated as synthetic ceramic fibers or synthetic siliceous fibers, and include rock wool made from natural mined mineral, slag wool made from blast furnace slag and glass wool made from refined batch materials of the type commonly used in glass manufacture. The glass or similar synthetic minerals, ceramic or siliceous wool fibers are usually most conveniently incorporated in the tobacco mass while in the form of webs or yarns in which the fibers are assembled rather loosely in groups, the web type being shown in Fig. 2, and the yarn type being shown in Fig. 3. The wool fibers are very minute in diameter and are usually smaller than rayon, silk and cotton threads commonly used in fabrics, and considerably smaller than human head hair. They are usually smaller than .001 inch in diameter and are preferably less than approximately .0007 inch in average diameter, and may be as small as or even smaller than .0003 inch average diameter. The finer the fibers, the softer and more harmless they are, even if taken into the mouth of the smoker.

The fibers are somewhat flexible and most conveniently handled as small webs or yarns in which the fibers are somewhat loosely assembled. For example, such glass or vitreous wool fibers

may be drawn in fluid form from a small crucible with the aid of steam and disposed on a moving conveyor belt in the form of a delicate web. Such webs may be compacted into yarns if desired, and as such incorporated into the body or mass of the tobacco of a cigar or cigarette. The fibers may be slightly twisted or compacted sufficiently to cause adherence between the same, but preferably they are not tightly twisted as into threads. These wool fibers do not have to be distributed uniformly throughout the mass but preferably they should be incorporated or interspersed at intervals throughout the mass. By increasing the number of non-combustible loose fibers in the cigar or cigarette, the greater the bond holding the ashes together and to the unburned portion of the cigar or cigarette. In Fig. 3 the fibers are more in the form of a yarn, with closer assembly or grouping of the fibers and with more space between the groups, and in both Figs. 2 and 3 some of the wool fibers are preferably arranged in the peripheral zone.

In Figs. 4 and 5 some of the glass wool fibers 13 are adherently secured to one face of a sheet or section of paper 14 in which the tobacco is rolled, so that by rolling tobacco in such a sheet the glass wool fibers will be distributed around the cylindrical mass of tobacco. The fibers 13 may be secured to the inner face of the paper which is to abut the tobacco, and more or less fibers may be used, depending upon the bond to be desired on the ashes.

In Fig. 6 I have illustrated how the synthetic mineral, ceramic or siliceous wool fibers may be incorporated in the paper itself to facilitate handling. In such a case, the glass wool fibers are either incorporated in the pulp before it is formed into the web as in paper making, or the glass wool fibers may be deposited on a freshly formed and still moist and soft web and rolled or calendered into the face of the web sufficiently to cause them to adhere thereto.

In Fig. 7 I have illustrated in perspective and diagrammatically, one manner of forming the cigarettes in a continuous strip by rolling the paper strip, such as in Fig. 4, progressively around a mass of finely divided tobacco.

In Fig. 8 I have illustrated a modification of the cigarette shown in Figs. 1 to 3, and in this modification the cigarette is provided intermediate of its ends with a glass or vitreous wool stop or plug 15 which abuts against one end of the mass of tobacco. This plug may extend entirely to the adjacent end of the cigarette so as to act not only as a fire barrier, but also as a porous filter through which the smoke is drawn when the cigarette is smoked. If desired, the space between the stop or plug 15 and the adjacent end of the cigarette may be filled with a mass 16 of cotton or vegetable fibers or a mixture of the same with glass wool fibers. It will be understood that the barrier or plug 15 will act as a fire stop, even though the space in the cigarette at the opposite side of the plug from the tobacco is of combustible material. The tobacco mass may have the non-combustible wool fibers incorporated therein, the same as in Figs. 1 to 3.

This stop or plug 15 is a porous, non-combustible fire barrier beyond which the cigarette will not burn by its own action. Most cigarettes, unlike cigars, ordinarily continue to burn after actual smoking ceases, and must be extinguished when they have burned to the part normally held in the mouth or when the smoker is through smoking. Many persons toss such burning cigarette butts upon the highways and into waste baskets and the like, and they are a fire hazard wherever they are tossed. If ash trays are not convenient, the burning butt should be extinguished before it is discarded. By having these fire barriers or plugs 15 intermediate of the ends of the cigarettes, at about the points where the cigarettes are burning when normally discarded, the barriers will limit burning automatically and cause extinguishment of the butt before the burning proceeds far enough to burn the fingers, so that the butt may then be safely discarded without danger of causing a fire. If the cigarette, after being ignited, is tossed away before the burning tobacco reaches the barrier, the burning will only continue until it reaches the barrier, which materially decreases the fire hazard. If cigarettes are made with such non-combustible barriers, the fire hazards both indoors and out from discarded, but burning, butts would be decreased, since it would then not be necessary to discard the butt until it was dead.

In Fig. 9 I have illustrated diagrammatically how the glass wool fibers may be incorporated in the interior of the mass of tobacco progressively, as the paper is rolled progressively around a mass of tobacco. The sheet 17 of paper is rolled progressively as the paper is fed along, and streams of fine tobacco 18 and 19 are deposited in succession upon the sheet just before it is rolled within the paper strip. These streams of tobacco may be deposited on the paper at the desired points, such as from spaced spouts 20, and between these spouts 20 I may feed the web or yarn 21 of glass or vitreous wool fibers which may pass around a guide or roller 22 and then along and slightly spaced from the paper, so that the second stream of tobacco 18 will be superimposed upon the web or yarn 21 of tobacco. In this form, as the paper 17 is fed along in flat condition, first one stream 19 of the fine tobacco is fed on to the paper continuously, and then as the paper and tobacco move along they pick up the glass wool yarn or web 21 and carry it along with them. Then another stream 18 of tobacco is deposited on the web, after which the paper 17 is rolled about the tobacco and web or yarn to complete the cigarette. This may be done progressively for long strips, and then the strip cut into the desired sizes for individual cigarettes. Obviously by depositing any desired number of tobacco streams, and feeding more webs or yarns of the glass wool fibers between the successive charges of tobacco, greater distribution of the fibers throughout the mass may be obtained.

It is also possible to thread the fibers as yarn by a needle through the cigarette from end to end so as to draw through the mass of tobacco any desired number of stretches of glass wool yarn or webs. Various other ways in which the glass wool fibers may be incorporated in the mass will appear to those familiar with the art of cigar and cigarette making, but those illustrated and described herein will illustrate some of the many different ways that the fibers may be incorporated in the tobacco.

In the case of cigars, the glass wool webs and yarns may be deposited flat upon the tobacco leaves or interspersed between the leaves, before they are rolled into the cigar, and thus in both cigarettes and cigars the wool fibers will be incorporated in and interspersed throughout the mass of tobacco. When a cigar or cigarette having the wool fibers interspersed therethrough is

smoked, the fibers as they are heated by the burning tobacco appear to act like tentacles and bend over and bind the ash particles together and to the unsmoked body of the cigar or cigarette and to have sufficient strength to confine the ashes or bond them together and to the unburned portion of the tobacco so that the cigar or cigarette may be moved about in the normal manner. If sufficient fibers are incorporated in a cigarette, for example, substantially the whole cigarette may be smoked with all of the ashes remaining on the end of the cigarette, even though the cigarette is moved about as usual in smoking, yet with both cigars and cigarettes so made, if one desires to knock off the ashes, this may be done in the usual manner by striking the burned end or ashes against a surface or object.

With cigars or cigarettes formed with the wool fibers therein, the fibers are so minute and flexible that they are perfectly harmless to the smoker, even if taken into the mouth, and they do not irritate or scratch the tongue or lips of the smoker and are almost invisible in the tobacco mass. They are shown in the drawing on an exaggerated scale to illustrate the principle, but actually they are almost invisible in the tobacco mass, yet they are effective in binding ashes together and to the unburned portion of the cigar or cigarette. The fibers in the ash portion are also substantially invisible. A single stretch of glass wool yarn through the center of a cigarette is fairly effective in binding the ashes together and preventing them from dropping off unintentionally, but better results are obtained if several stretches or lengths of the yarn or webbing are incorporated in a cigar or cigarette. The fibers of the yarn or webbing of the wool appear to fuse just enough to be brittle and enable the ashes to be broken off when desired, yet to have sufficient strength to bind the ashes together and to the unsmoked body of the tobacco.

The fibers of the wool are preferably formed from chemically pure glass, so as not to contain impurities that will have any deleterious effects on the smoker, but various other similar non-combustible fibers such as mineral or vitreous wool fibers may be employed within the broadest principle of the invention. Hence, when referring to glass wool, it will be understood that I consider various synthetic mineral wools or synthetic ceramic or siliceous fibers to be the equivalent broadly of glass wool, but I prefer glass wool because of the fact that the ingredients may be carefully selected and controlled, with less danger of contamination through impurities.

It will be understood that various changes in the details and materials, and in the different arrangements of the fibers, which have been herein described and illustrated in order to explain the nature of the invention, may be made by those skilled in the art within the principle and scope of the invention, as expressed in the appended claims.

I claim:

1. A cigar or cigarette having glass fibrous yarn strands running lengthwise thereof.

2. A cigar or cigarette comprising a rod-shaped mass of tobacco having glass wool yarn incorporated in said mass and progressing throughout the same from the end to be lighted approximately to the zone to be held in the mouth.

3. A cigar or cigarette comprising a rod-shaped mass of tobacco having incorporated therein a plurality of strands of glass wool yarn with the fibers of the yarn loosely assembled and said strands running from approximately the end to be lighted approximately to the zone to be held in the mouth, said strands being disposed in different parts of said mass.

4. A cigarette having glass wool fibers arranged therein and extending generally lengthwise of the cigarette from the end to be lighted approximately to the zone to be held in the mouth, at least a portion of said fibers being arranged in proximity to the inner surface of the paper of the cigarette and progressing generally in a direction endwise of the cigarette.

5. A cigar or cigarette having incorporated in the mass of tobacco sufficient loosely assembled glass wool fibers to confine the ashes as burned to the remaining body of the cigar or cigarette when the same is handled in a normal manner, but having a composition which becomes brittle below approximately the temperature of the burning tobacco in a cigar or cigarette to enable knocking off of the ashes by striking the same mechanically against an abutment.

6. A cigar or cigarette having incorporated therein a plurality of loosely assembled glass fibers, each fiber having a diameter of less than approximately .001 inch, and the glass of the fibers having a composition which becomes brittle below approximately the burning temperature of the tobacco in a cigar or cigarette.

7. A cigar or cigarette having glass wool fibers interspersed throughout the tobacco mass and also adjacent the marginal zone thereof, said fibers being substantially all of a fineness such that their diameters are less than approximately .001 inch.

8. A cigar or cigarette having glass wool fibers incorporated therein, at least a part of which is adjacent the peripheral surface zone thereof and distributed around said peripheral zone.

9. A cigar or cigarette having incorporated therein, a plurality of glass wool fibers that are finer than human hair and have a composition which becomes brittle below approximately the temperature of the burning tobacco in a cigar or cigarette.

10. A cigar or cigarette having glass wool fibers incorporated in the tobacco containing zone thereof for confining to the unburned portion thereof, the ashes formed by burning the tobacco of another portion thereof.

11. A cigarette provided with a filler of tobacco admixed throughout with inert fire resisting material including spun glass adapted to strengthen the ash, and a paper wrapper incorporating spun glass thoroughly disseminated throughout the substance of the paper, said spun glass having a fusing point causing it to soften and adhere slightly at points of crossing due to the heat evolved when the cigarette is smoked and thereby form a supporting network within and about the ash.

12. A cigarette having a paper wrapper and in which wrapper is incorporated spun glass thoroughly disseminated throughout the substance of the paper, said spun glass having a fusing point causing it to soften and adhere slightly at points of crossing due to the heat evolved when the cigarette is smoked and thereby form a supporting network about the ash.

13. A cigarette or cigar comprising a combustible envelope, tobacco held packed in said envelope and glass fibers cooperating with said

envelope to provide a non-combustible skeleton frame therefor.

14. A cigarette or cigar comprising a combustible envelope, tobacco held packed in said envelope, and glass fibers embodied in said envelope to provide a non-combustible skeleton frame formed integrally with said envelope.

15. A cigarette or cigar comprising a combustible envelope, tobacco held packed in said envelope, and glass fibers forming a non-combustible perforate reinforcing frame for said envelope.

16. A cigarette paper having incorporated within and interspersed throughout the interior of the body thereof, a substantial percentage of glass wool fibers, small enough in diameter to be freely flexible without breaking.

17. A cigarette paper having incorporated within and interspersed throughout the interior of the body thereof, a substantial percentage of synthetically made, mineral wool fibers, small enough in diameter to be freely flexible without breaking but of a composition which is normally freely flexible at room temperatures but which will become brittle when subjected to the heat of burning tobacco in a cigarette.

18. A cigarette having incorporated within and interspersed throughout the interior of the body of the paper wrapper thereof, sufficient freely flexible glass wool fibers to confine the ashes of the burned tobacco thereof to the unburned wrapper for a substantially longer proportion of the cigarette than is possible when the wrapper is made with an ordinary paper wrapper.

19. A cigarette having incorporated within and interspersed throughout the interior of the body of the paper wrapper thereof, sufficient freely flexible synthetically made, mineral wool fibers to confine the ashes of the burned tobacco thereof to the unburned wrapper for a substantially longer proportion of the cigarette than is possible when the wrapper is made with an ordinary paper wrapper.

20. A cigar or cigarette having incorporated therein a plurality of synthetically made, mineral wool fibers which are freely flexible at room temperatures but which will become brittle when subjected to the heat of burning tobacco in a cigarette or cigar, and sufficient in amount to cause increased adherence of ashes on the burned end to the unburned end.

21. A cigarette having incorporated therein in the portion to be burned during use, a plurality of loose glass wool fibers small enough in diameter to be freely flexible without breaking at room temperatures, but which becomes brittle when subjected to the temperature within the burning portion of the cigarette, the proportion of said fibers being sufficient to cause substantially increased adherence of ash on burned end to the unburned end when the cigarette is smoked.

GILBERT A. BETTS.