
Frank J. Ludington, of Waterbury, Connecticut.

Process of Making Cigarettes from Continuous Cigarette-Rods.

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To all whom it may concern:

Be it known that I, Frank J. Ludington, a citizen of the United States, residing at 37 West Main Street, Waterbury, county of New Haven, State of Connecticut, have invented certain new and useful improvements in Processes of Making Cigarettes from Continuous Cigarette-Rods, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

The present invention relates to the finishing of cigarettes which are made in a continuous process by forming a continuous filler and securing a continuous wrapper thereon.

My improved method of finishing a continuous cigarette consists in subjecting it to heat and pressure in a continuous operation as soon as the wrapper is sealed upon the filler, so as to smooth and iron the seam and "set" the filler and wrapper in the desired shape.

The mechanism for making continuous cigarettes is already well known and does not need any illustration, and the means is wholly immaterial which may be employed in such manufacture to simultaneously heat and press the cigarette. In practice I apply the means for pressing and heating the cigarette to the moving continuous cigarette as soon as the wrapper is sealed thereon, so that if the wrapper is pasted in the usual manner the seam may be pressed and smoothed while the paste is drying and the surface of the cigarette thus finished in the most perfect manner.

One means of practicing my invention is shown in the annexed drawings, in which—Figure 1 is a side elevation, and Fig. 2 a plan, of an attachment for placing upon cigarette-machines, in the path of the moving tape, to form the filler, to seal the wrapper, and to apply the heated pressure thereto. Fig. 3 is a longitudinal section of the heating and pressing appliances. Fig. 4 is a cross-section of the same on line 4 4 in Fig. 3. Fig. 5 is an edge view, and Fig. 6 a plan, of a cigarette-ironing device provided with spring-cap. Fig. 7 is an end view of the cigarette-presser, with electric coils for heating the same.

a designates the usual barrel feed-guide, into which the tape b is led, carrying the wrapper, with a continuous layer of the tobacco thereon. The tape and wrapper are indicated by dotted lines in Fig. 2. c represents the sealmg appliances, which may be of any desired character. The drawings represent the usual "first folder," which turns downwardly one edge of the wrapper while paste is applied to the other by any suitable means. Whatever the seaming device the cigarette-rod is delivered thence to the heating and pressing appliance. e is the cap of the ironing device, which 65 when a pasted seam is used operates to fold the pasted edge of the wrapper down upon the opposite edge to form the seam like other seaming devices. The cap presses upon the seam and the body of the cigarette while it passes beneath the cap, and the cap in the present invention is heated by any suitable means to iron the cigarette during such movement. The cap may be heated by gas, steam, electricity, or any other convenient means, the fixtures being shown herein for heating it by gas and by electric current.

f is a heating-tube secured lengthwise upon the cap e and formed with perforations g, and h is a nozzle to supply a mixture of air and gas to the interior of the tube, which when ignited burns inside the tube and heats the whole length of the cap.

A U-shaped guide i is extended beneath the first folder c and the heated cap e and supports the tape and the under side of the cigarette during the pressing operation. This guide i is shown extended beyond the left-hand or delivery end of the heated cap and its upper surface beveled to the bottom of the U-shaped channel to permit the flattening of the tape in the usual manner, as indicated by the dotted lines b, to deliver the cigarette therefrom. One edge of the tape b is shown in Fig. 4 extended outwardly between the 95 U-shaped guide i and the cap e to expose a greater portion of the wrapper to the heated contact of the cap, and the wrapper is indicated by the lines j with its edges folded over one another beneath the cap e. In Fig. 3 the cap is shown tapered outwardly to exert a gradually-increasing pressure upon the cigarette k as it is drawn beneath the cap, and thus bring the cigarette into close contact with
the heated surface. A handle \( e \) is shown in Fig. 1 attached to the cap \( e \) and secured movably to the U-shaped guide \( i \) by a setscrew \( g \), the handle serving to remove the heated cap at any time, if its channel becomes obstructed. With such construction the cap is in uniform adjustment to the guide \( i \), and the gradually-increasing pressure is formed by its tapering mouth or inlet. Figs. 5 and 6 show the cap held movably upon the bottom guide by studs \( k \) and pressed toward the bottom guide by springs \( k' \), which thus operate to produce an elastic pressure upon the cigarette. With such a construction the tape \( b \) is driven continuously, carrying the paper wrapper with it, with the tobacco fed uniformly upon its surface.

The wrapper is turned into trough shape by the feed-guide \( a \), and the seam is formed as it passes under the cap beyond the folder \( c \). The seamed cigarette then moves through the channel of the ironing device, the entering end of which admits the cigarette freely, while the remainder of the channel operates to gradually compress the cigarette-rod. The heat of the cap operates to produce a perfectly uniform surface upon the cigarette and to entirely free the same from wrinkles, indentations, or irregularities, and to permanently set the rod to the desired shape in cross-section so that it does not lose its form by subsequent handling after it is cut into cigarette lengths.

The channel in the heating appliance is shown of suitable shape to form an oval cigarette, and the invention is especially useful in the finishing of oval cigarettes, as oval cigarettes when made with two opposite corners by a continuous process do not commonly retain their oval shape very long, but when packed and stored have a constant tendency to assume the round form, so that after awhile the opposite corners of the cigarette disappear and it presents merely a flattened form with rounded edges. Such rounded edges distinguish a machine-made oval cigarette from a hand-made oval cigarette, in which the filler and wrapper are sealed with such care and by such means that they retain their shape as long as is desired. By my invention the surface of the wrapper and its seam are improved in appearance and the filler of the cigarette is permanently set in the desired shape.

Heretofore it has been common in seaming the wrapper upon a continuous filler to apply the wrapper to the filler, fold the edges of the wrapper one over the other, and secure the overlapping edge by means of paste. The moisture of the paste when thus applied tends to wrinkle and pucker the paper by the expansion of the paper along the line of the seam. Such puckering is aggravated by the application of the paste commonly to one edge only of the wrapper, which is necessarily expanded by the moisture more than the opposite edge, so that when the seam is dried the opposite edge is unduly contracted. I have found that by subjecting the pasted seam to heat and pressure in a continuous operation the seam is simultaneously dried and ironed and the entire surface of the cigarette rendered smooth and uniform. To secure the best effect of the heat and pressure, the continuous cigarette when seamed is subjected while in continuous motion to a gradually-increasing pressure in conjunction with the heat, so as to press upon the surface of the cigarette, and thus smooth the wrapper while the heat sets the filler permanently in the desired shape. If the heat and pressure were applied to a stationary cigarette or cigarette-rod, a little carelessness would produce an overheating of the cigarette; but by applying the heat and gradually-increasing pressure to a continuous cigarette when moving in the ordinary process of its manufacture the operation of the heat is readily limited in the exact degree which is required to produce the best results. In finishing oval cigarettes the pressure is applied to the surface of the cigarette-rod when properly shaped and presses such shaped surface so as to set the wrapper and the filler into such shape. The effect upon the cigarette-rod is such that it does not lose its form by subsequent handling after it has been cut to cigarette lengths, and I am thus enabled to produce by a continuous process an article of much higher grade than has been heretofore made.

My experience has shown that heat, with gradually-increasing pressure, can be applied to the moving continuous cigarette with the benefits noted above and without any risk of injury to the cigarette either in the wrapper or filler. My invention constitutes a great improvement in the art of making continuous cigarettes, as the hot pressing of the cigarette-rod is effected while it is in motion and without adding anything to the time or expense of manufacturing the cigarettes, while it greatly increases the quality of the article by improving its appearance and by "setting" it permanently to the form desired.

I have found that machine-made cigarettes formed with crimped seam have some irregularities upon the surface which are entirely removed by the use of heat and pressure according to my invention, and such crimped cigarettes are therefore improved in appearance and when made of oval form are also enabled to retain the desired shape, so that my process improves such cigarettes in both respects.

From the above description it will be understood that the invention is applicable to a cigarette-rod having a seamed wrapper, whatever means be employed to form the seam of the wrapper.

Having thus set forth the nature of the invention, what is claimed herein is:

1. The method of drying, ironing and per-
manently "setting" in the desired shape a continuous cigarette-rod, which consists in subjecting the continuous cigarette-rod to the simultaneous application of heat and the continuous smoothing-pressure of a pressing-iron.

2. The process of making and finishing a continuous cigarette-rod, which consists in continuously seaming the wrapper upon a filler, and then subjecting the continuous cigarette-rod to the simultaneous application of heat and the smoothing pressure of a pressing-iron, to permanently "set" the continuous filler and wrapper in the desired shape.

3. The process of making and finishing a continuous cigarette-rod, which consists in forming a continuous filler, securing a wrapper thereon with a pasted seam, continuously propelling the cigarette-rod thus formed, and simultaneously applying heat and a smoothing-pressure to the seam upon the moving cigarette to dry and smooth the same.

4. The process of making and finishing a continuous cigarette-rod, which consists in continuously seaming the wrapper upon a filler, and then subjecting the cigarette-rod to heat and a gradually-increasing pressure in a continuous operation, to smooth and "set" the continuous cigarette in shape.

5. The process of making and finishing a continuous cigarette-rod, which consists in continuously forming a filler of oval cross-section and seaming a wrapper upon the same, and then subjecting the oval surface of the cigarette-rod to heat and a gradually-increasing pressure in a continuous operation, to permanently "set" the continuous filler and wrapper in such oval shape.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

FRANK J. LUDINGTON.

Witnesses:
WILSON H. PIERCE,
THOMAS S. CRANE.