J. GUÉNIFFET & J. NICAULT.

COATING CIGARETTE TUBES.

APPLICATION FILED APR. 1, 1907.

921,104. **Patented May 11, 1909.**

3 SHEETS—SHEET 1.

FIG. 1.

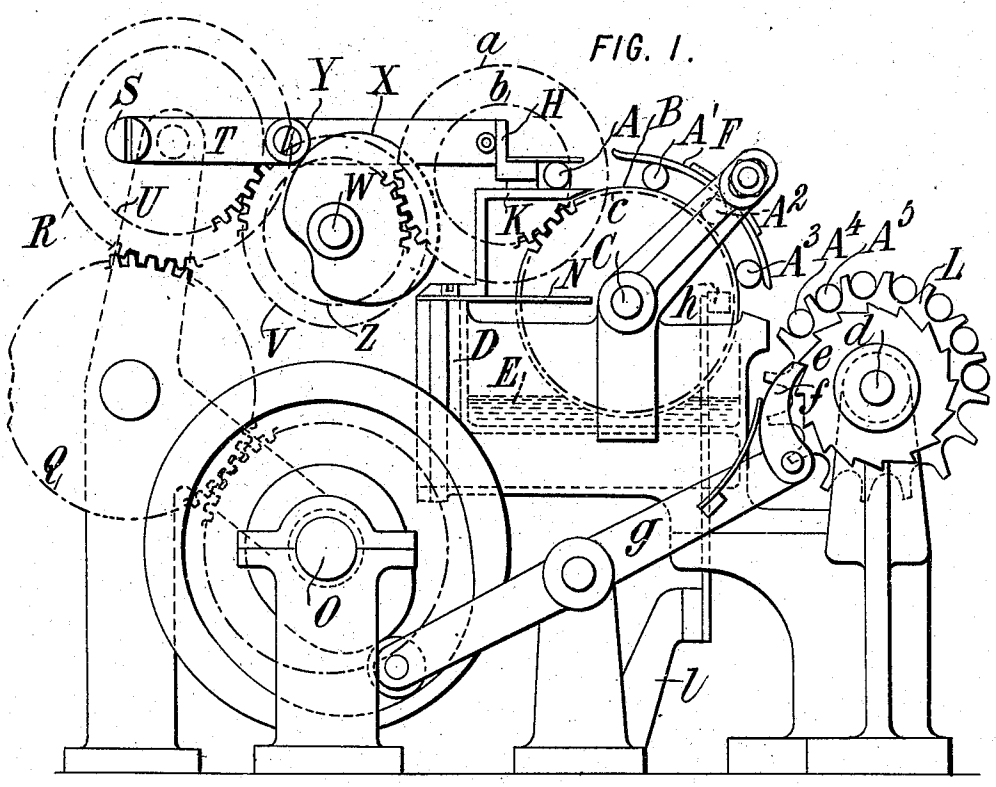
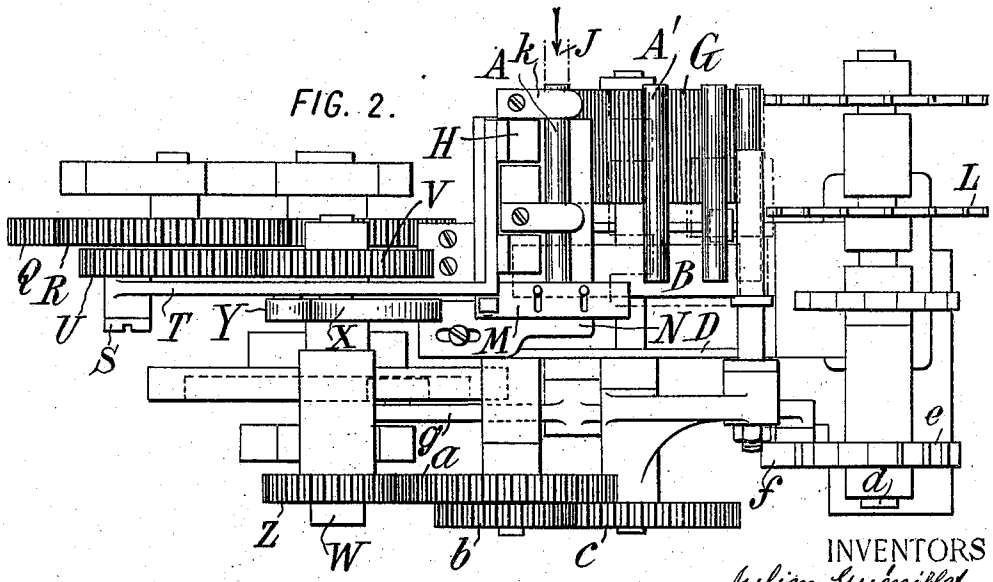


FIG. 2.



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3 SHEETS—SHEET 2.

FIG. 3.

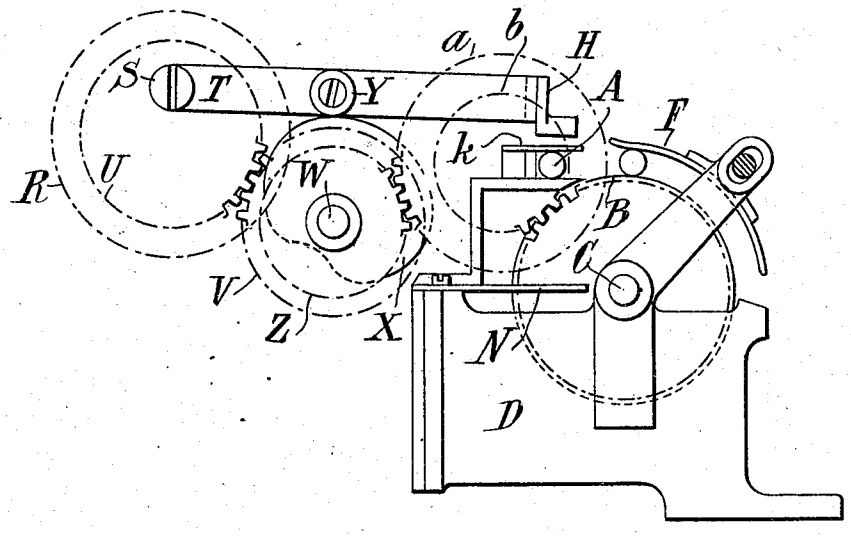
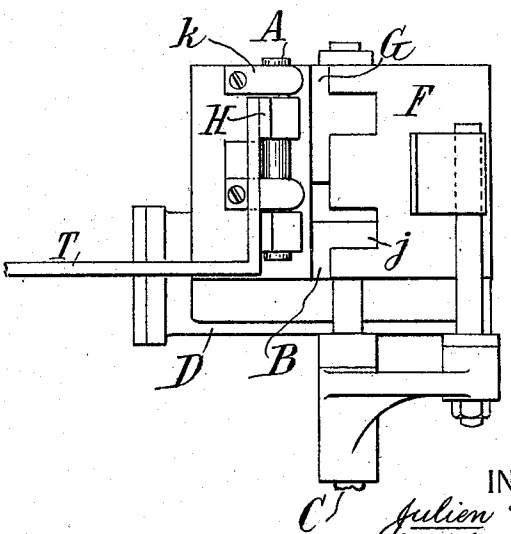


FIG. 4.



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3 SHEETS—SHEET 3.

FIG. 6

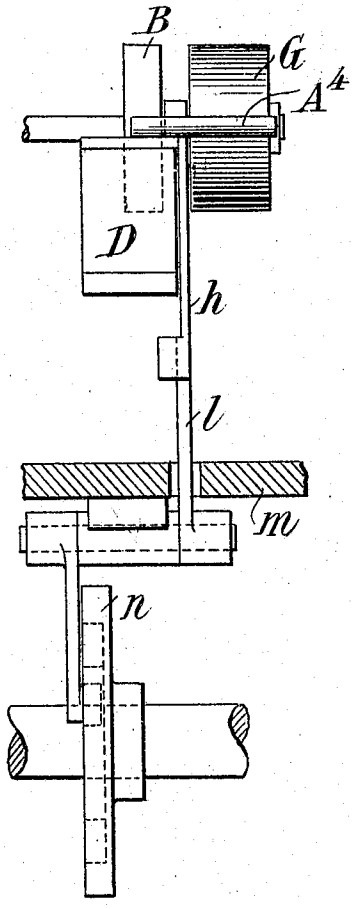
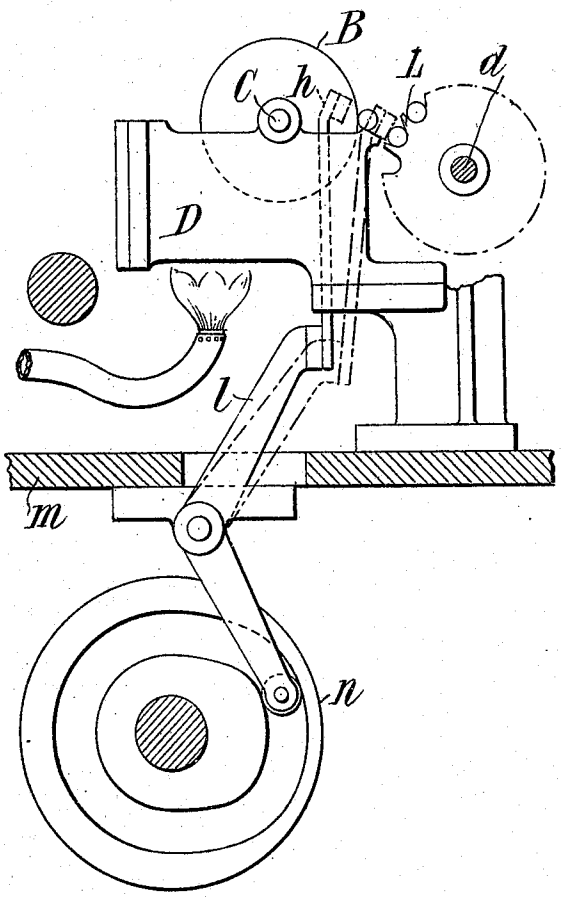


FIG. 5.



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UNITED STATES PATENT OFFICE.

JULIEN GUÉNIFFET AND JULES NICAULT, OF PARIS, FRANCE, ASSIGNORS TO SOCIÉTÉ ANONYME DES USINES A. E. DECOUFLE, OF PARIS, FRANCE.

COATING CIGARETTE-TUBES.

No. 921,104. Specification of Letters Patent. Patented May 11, 1909.

Application filed April 1, 1907. Serial No. 365,799.

To all whom it may concern:

Be it known that we, JULIEN GUÉNIFFET and JULES NICAULT, both citizens of the Republic of France, and residents of Paris, France, have jointly invented certain new and useful Improvements in Coating Cigarette-Tubes, of which the following is a specification.

This invention aims to provide a method and apparatus for applying a coating to a cigarette tube, such for example as a coating of paraffin, to form a mouthpiece thereon. The coating is applied by rotating the cigarette in contact with the coating material, preferably rolling a number of tubes in succession over a surface carrying the coating material, the cigarettes being applied at a common entrance point and removed at a common exit point, and being preferably arranged several simultaneously in the space between these two points. This method of handling and coating the tubes results in a very high output for the machine, since it is working upon several tubes simultaneously. Certain other advantages are referred to in detail hereinafter.

The accompanying drawings illustrate more or less diagrammatically a process and apparatus according to the invention.

Figure 1 is an elevation, and Fig. 2 a plan with a curved guide hereinafter referred to removed. Fig. 3 is a side elevation of the feed table and pusher with the latter in a different position from that of Fig. 1. Fig. 4 is a plan of the same parts with the curved guide in place. Fig. 5 is a longitudinal section illustrating the operation of a finger for ejecting the tubes. Fig. 6 is an end elevation of the same parts.

Referring to the drawings, the paper tubes A, A^1, A^2, A^3, A^4, A^5 &c. are carried one after the other over a coating surface B, which is preferably a cylindrical surface on a continuously turning shaft C, and dipping into a vessel D carrying the paraffin or similar material indicated at E, so that the paraffin is continuously taken up upon the cylindrical surface B. The tubes adhere to the coated surface, and are caught between this surface and a concentric curved guide F, so that as the surface turns they are rolled between or over the faces of these two members uninterruptedly from the point of entrance to the point of exit. As soon as one tube has advanced sufficiently beyond the entrance point, it is followed by another without waiting for the complete operation on the first. This process of applying or maintaining several tubes at once upon the coating surface, is of great importance as insuring a very large output.

On the shaft C there is preferably mounted also a cylindrical gripping member G having its face striated in axial direction, and having its diameter substantially equal to that of the cylinder B. This gripping cylinder grips between it and the curved guide F the portion of the tube which is not placed upon the coating cylinder and carries it along with the portion which is to be coated.

The tubes are fed to the rolling and coating mechanism by means of a reciprocating pusher H. The apparatus may be arranged to receive tubes by hand or directly from any tube-forming or cigarette-forming machine, the tubes being either empty or full. In the arrangement shown we suppose an endless tube J (either pasted or crimped) to be fed in the direction of the arrow, to be arriving upon a table K, and to be cut off intermittently by any suitable shears and fed forward in cigarette lengths by the movement of the pusher H immediately after each length is cut off.

By the rotation of the cylinders B and G each tube which is pushed off the table K is compelled to rotate as it rolls in contact with the cylinders and the guide F, until it arrives at a point where it has made one or more revolutions. It falls then upon a frame consisting of disks L having a number of notches in their periphery, and arranged in positions to receive the tubes without contact with the coated portions. The frame rotates step by step in order to receive the successive cigarettes, and is of such diameter as to carry the tubes until the coating is sufficiently dry, by which time the tubes roll out of the notches into any suitable receptacle. This frame is therefore both a transporter and a drier. The number of tubes to be subjected to the coating action at one time will depend upon the diameter of the coating cylinder and the speed of the machine, and the drying frame will be proportioned accordingly.

The length of the portion of the cigarette tube which shall be coated is determined by the stop M (Fig. 2), which is laterally adjustable as shown, and which determines the distance to which the tube shall project over the

surface of the coating cylinder, this limiting action of the stop M taking place before the tubes are carried by the pusher H to the coating cylinder.

A scraper N may be brought into more or less intimate proximity with the cylindrical surface by means of the longitudinal adjustment shown, and may thus serve to regulate the thickness of the coating carried by the cylinder, and consequently the thickness of the coating applied to the tube.

Various driving means may be used for obtaining the several movements described. For example in the machine shown the main driving shaft is indicated at O, and may be the extended shaft of a cigarette machine to which this coating machine is connected. The movement of this shaft is transmitted by means of gears P Q to a gear R carrying a crank pin S connected to a link T carrying at its opposite end the pusher H. The gear U rotates with the gear R and engages a gear V, upon the shaft W of which is a cam X, which at proper intervals engages a roller Y on the link T so as to lift the pusher on its return movement to allow it to pass over the tube A which is upon the table K. From the gear Z which rotates with the gear V rotation is transmitted to the gear *a*, and thence from gear *b* to gear *c* upon the shaft C of the coating cylinder.

The shaft *d* of the drying frame carries a ratchet-wheel *e*, which is engaged by a ratchet *f* carried upon a lever *g*, which may be oscillated at the proper moment by any suitable means such as a cam carried on the shaft O.

In order to insure the detachment of the tubes at the proper point, it is preferable to use a finger *h* which receives a backward and forward movement of the same frequency as the movement of the pusher and of the drier. Each time that a new pair of notches of the disks L presents itself at the exit point from the coating cylinder, the detacher or finger *h* is advanced and pushes the finished tube from the cylinder, so that it falls into such notches. The pushers H move forward in a substantially straight line from the position of Fig. 1 until they have shifted a tube from A to A′, after which they rise through the notches *j* of the curved guide F and move backward on a higher level so as to avoid striking on their backward movement the next tube which has taken the position A. At the substantial completion of the backward movement of the pushers they are lowered again to the position of Fig. 1. The tubes are held lightly down upon the table K by means of the springs *k* which are stationary, and alternate in position with the pushers H. The ejecting finger *h* may be conveniently operated by attachment to a lever *l* pivoted below the table or base *m* on which the machine rests (see Figs. 5 and 6) and having its lower end oscillated at suitable intervals by a cam *n*.

What we claim is:—

1. The method of applying a coating of a freely flowing thin liquid to the ends of paper cigarette tubes, which consists in carrying the coating material upon a distributer and rolling said tubes upon said distributer with a plurality of tubes at different points thereof simultaneously, the consistency and quantity of the coating material carried upon the distributer being such as to completely coat the tubes during the simultaneous rolling of them over the distributer under slight pressure.

2. The method of applying a coating of melted paraffin to paper cigarette tubes, which consists in carrying the melted paraffin upon a distributer, and rolling said tubes upon said distributer with a plurality of tubes at different points thereof simultaneously, the melted paraffin being carried on the distributer in such quantity as to completely coat the tubes during the simultaneous rolling of them over the distributer under slight pressure.

3. An apparatus for applying a coating of a freely flowing thin liquid to cigarette tubes, including a rotating distributer, means for rolling a plurality of tubes simultaneously upon the upper side of said distributer at different points, and a vessel carrying a supply of said liquid and into which the under side of the distributer dips so as to take up a coating of said liquid and to completely coat the tubes during the simultaneous rolling of them over the distributer.

4. An apparatus for applying a coating of melted paraffin to cigarette tubes, including a distributer, means for rolling a plurality of tubes simultaneously upon said distributer at different points, and means for applying to said distributer a coating of melted paraffin in such quantity as to completely coat the tubes during the simultaneous rolling of them over the distributer.

5. An apparatus for applying a coating to a cigarette tube including a cylindrical turning coating member carrying the coating material on its face, a curved guide, and a cylindrical gripping member between which and said guide the tube is gripped, said gripping member being concentric with and turning with said coating member and serving to roll the tube over the face of said coating member.

6. An apparatus for applying a coating to a cigarette tube including means for rotating it with a portion thereof in contact with the coating material, and means for regulating the length of such portion.

7. An apparatus for applying a coating to a cigarette tube including a moving member having a surface carrying the coating material, means for rotating said tube with a por-

tion thereof in contact with said surface, and an adjustable stop for limiting the length of such surface which may be brought into contact with the cigarette.

8. An apparatus for applying a coating to a cigarette tube including a cylindrical turning coating member carrying the coating material on its face, a curved guide, and a cylindrical gripping member between which and said guide the tube is gripped, said gripping member being concentric with and turning with said coating member and serving to roll the tube over the face of said coating member, in combination with means for introducing said tube between said guide and said gripping member.

9. An apparatus for applying a coating to a cigarette tube including means for rotating it in contact with the coating material, in combination with a transversely moving pusher for removing said tube from contact with the coating material.

10. An apparatus for applying a coating to a cigarette tube including means for rotating it in contact with the coating material, in combination with a carrier for receiving the coated tube and carrying it until the coating is substantially dry, and a pusher for removing the tube from the coating material to said carrier.

11. In a machine of the class described in combination a cylindrical distributer B, a cylinder G in line therewith, and a concentric curved guide F between which and the cylinder G the body of the cigarette is adapted to be caught and rolled with its end resting on the distributer B.

12. In a machine of the class described in combination a cylindrical distributer B for the coating material, a concentric curved guide F for causing the tube to roll over the distributer, and a pusher moving in a direction approximately tangential to said distributer for introducing the tube between the distributer and the guide.

13. In a machine of the class described in combination a distributer for the coating material, a horizontal support for the cigarette tube adjacent to said distributer, a reciprocating pusher H adapted to push the cigarette off said horizontal support and on to the distributer, and means for elevating said pusher on its return stroke to permit the introduction of another cigarette tube on to the horizontal support during such return stroke.

14. In a machine of the class described in combination a rotating cylinder, and a concentric curved guide F between which and the cylinder a cigarette tube is adapted to be gripped and rolled, and a pusher H for introducing a tube between said cylinder and guide, said guide being provided with a notch *j* and the pusher H being adapted to pass through said notch, whereby the pusher may force the tube well under the guide without interference by said guide.

15. In a machine of the class described in combination a table K, stationary members *k* for holding the tube lightly down upon the table, and pushers H for pushing the tube off the table.

In witness whereof, we have hereunto signed our names in the presence of two subscribing witnesses.

JULIEN GUÉNIFFET.
JULES NICAULT.

Witnesses:
E. ROGIER,
DEAN B. MASON.