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METHOD AND MEANS FOR MANUFACTURING FILTER MOUTHPIECE CIGARETTES

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Fig. 1

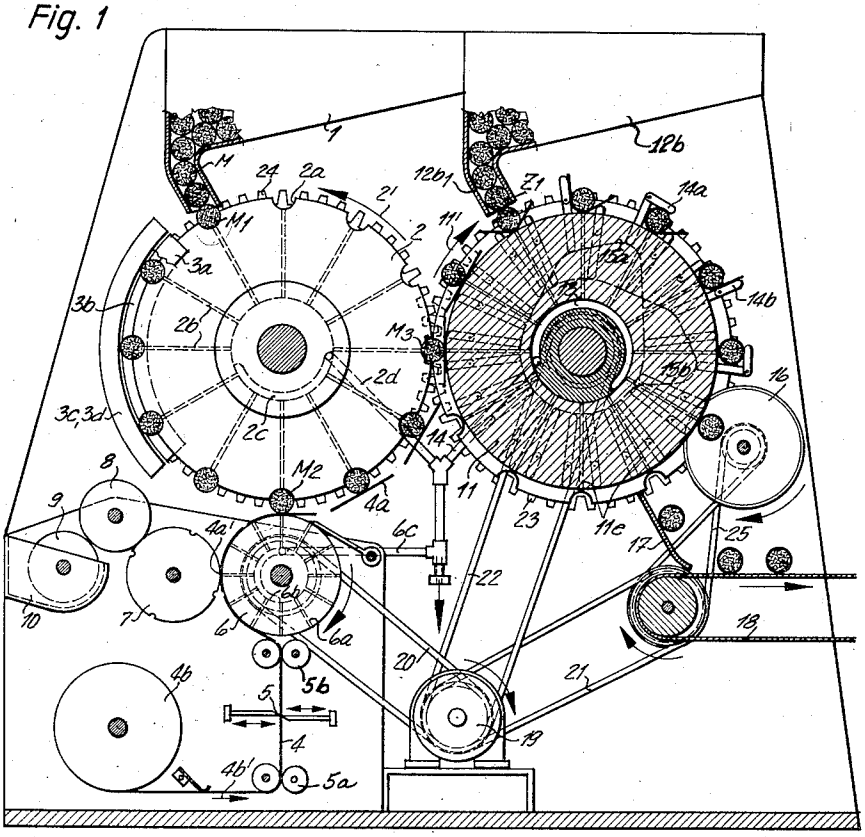
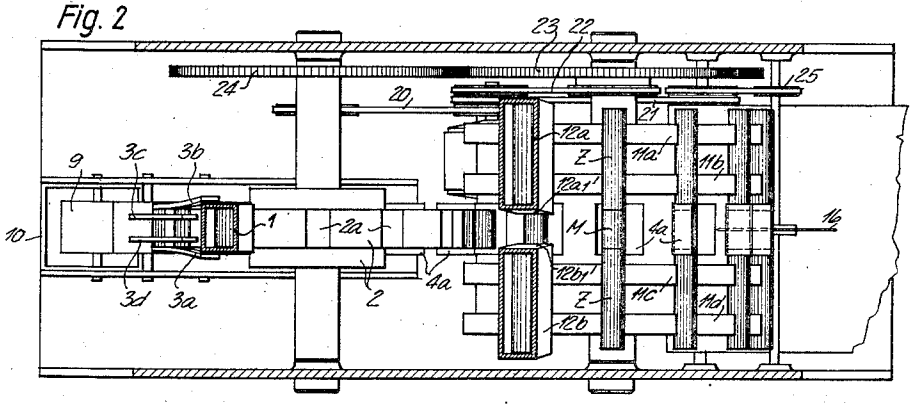


Fig. 2



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METHOD AND MEANS FOR MANUFACTURING FILTER MOUTHPIECE CIGARETTES

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5 Claims. (Cl. 131—94)

The invention relates to improvements in the manufacture of filter mouthpiece cigarettes or the like, and has particular reference to a method and means by which an assemblage consisting of two cigarettes arranged in spaced axial alinement with a mouthpiece of double length therebetween is formed on rotary members and the mentioned cigarette parts are joined together by a glued connecting band and thereafter the assembly is divided in the center of the mouthpiece so that two cigarettes each having a mouthpiece are produced.

The present invention differs basically from known machines and methods of this kind in that first the mouthpieces of double length are deposited on a rotary member and are brought into contact with the glued connecting bands, whereupon the latter are deposited upon a second rotary member on which the cigarettes supplied from two sides are laid down on the end portions of the connecting bands projecting beyond the mouthpieces. The end portions of the connecting bands extending laterally beyond the ends of the cigarettes-mouthpiece-groups are then wrapped around the abutting joints between the mouthpieces and the two adjacent cigarettes on the same rotating member, thereafter the assemblages thus formed are severed in the center of the mouthpiece and the mouthpiece cigarettes formed in this manner are conveyed to a place of deposit.

This and other objects of the invention are described in the following specification and illustrated in the accompanying drawings showing a preferred embodiment of a machine of the invention:

In the drawings:

Fig. 1 illustrates diagrammatically a side view of a machine, partly shown in sectional view; and,

Fig. 2 represents a top view, with the magazines for mouthpieces and cigarettes cut away for sake of clarity.

Referring first to Fig. 1, the magazine 1 contains the mouthpieces M of double-length which pieces are deposited at M1 into trough-like grooves 2*a* on the circumference of a rotary drum 2 rotating in the direction of the arrow 2' (counterclockwise).

In order to obtain an accurate placement of the mouthpieces into the grooves 2*a*, there are provided lateral guide plates 3*a* and 3*b* (Figs. 1, 2) between which said mouthpieces M are passed through when the drum 2 revolves, permitting the mouthpieces to accurately adjust themselves in the grooves 2*a* of the drum 2. There are also provided two arcuate strips 3*c* and 3*d* which prevent the mouthpieces from dropping out of the grooves when the drum is rotated.

Suction ducts 2*b* communicate with the bottoms of the grooves 2 in a manner known per se, which ducts after the drum 2 has been rotated beyond the guide strips 3*c*, 3*d* are brought into communication with a connecting passage 2*c* which communicates with a source of suction through a duct 2*d*. The mouthpieces are thus retained in the grooves 2*a* by means of the applied suction force, after they have passed the guide strips 3*c*, 3*d*.

At the point M2 glued connecting bands 4*a* are affixed to the mouthpieces, which bands, are cut-off at 5 from a paper tape 4 unwinding by action of driver wheels 5*a* from a supply spool 4*b* in the direction of the arrow 4*b*. The individual bands 4*a* are deposited on a rotary suction drum 6 by action of wheels 5*b*.

The suction drum 6 also is provided with suction ducts 6*a* which communicate through a connecting duct 6*b* with a suction pipe 6*c* and thus retain the severed connecting bands 4*a* on the drum 6. These connecting bands are at 4*a'* coated by a drum 7 with an adhesive which by the intermediary of a drum 8 is supplied by a drum 9 with adhesive contained in the receptacle 10.

After the mouthpieces M together with the connecting bands 4*a* adhering thereto have been moved by the rotary drum 2 from the place M2 to the place M3, the connecting bands together with the mouthpieces adhering thereto are deposited on a rotary drum 11 which rotates clockwise in the direction of the arrow 11'.

The rotary drum 11 is so wide that it is possible to place groups of two axially spaced and axially alined cigarettes Z thereon, with the mouthpiece M therebetween. For this purpose there are provided at each of the two ends of the mouthpieces M around the periphery of the drum 11 two rings 11*a*, 11*b* and 11*c*, 11*d*, respectively, which are provided with axially extending grooves. At the point Z' the cigarettes Z are deposited in pairs into the grooves in these rings 11*a*, 11*b* and 11*c*, 11*d*, respectively, from two magazines 12*a* and 12*b* (see also Fig. 2) so that they come to rest with one of their ends, which face the mouthpieces M upon the projecting end portions of the connecting bands 4*a* to the center portions of which the mouthpieces are adhering.

Furthermore the provision is made that the discharge supports $12a_1$ and $12b_1$ of the magazines 12*a* and 12*b* are inclined as shown at $12a_1$, and $12b_1$, (see Fig. 2), towards the mouthpiece M, in order to assure that the cigarettes Z are moved into abutting engagement with the ends of the mouthpiece. The cigarettes leaving the discharge branch of the magazine thus hit against the respective end portion of the mouthpiece and later come to rest upon the connecting band.

The connecting band deposited on the periphery of the drum 11 together with the mouthpiece M adhering thereto, and as well the cigarettes Z deposited in the grooves of the drum rings 11*a*, 11*b*, 11 *c* and 11*d* are retained thereon by means of air suction, which in a well known manner is provided through suction ducts 11*e* which are in communication with suction pipe 14 by a connecting channel 13.

After the cigarettes Z abutting in lengthwise direction against the end faces of the mouthpieces M have been deposited at Z1 on the connecting band, the latter is wrapped around the mouthpiece and around the end portions of the cigarettes contacting said pieces by means of folding elements. This is accomplished by the folding element 14*a* and 14*b* (shown in Fig. 1 in dotted lines), each of which elements is controlled by a stationary cam 15*a* and 15*b*, respectively. This method of folding the connecting band does not form part of the invention and therefore is not described and shown in detail but is the subject matter of U. S. Patent 2,714,384, issued August 2, 1955.

After the connecting band has been completely wrapped around the cigarettes and the mouthpiece, the latter is cut through at its center by means of a rotary cutting knife 16. Thereafter the suction ducts move out of communication with the connecting duct 13, so that the now completed mouthpiece cigarettes can be deposited onto a chute 17 which directs the cigarettes onto a conveyor belt 18 which carries the cigarettes to a collecting magazine not shown.

The described machine is driven by a motor **19** which drives the suction drum **6** through an endless belt or chain drive **20**, and the conveyor belt **18** through another endless belt **21**, while the drum **11** is driven by an endless belt **22** or the like. Mounted on the shaft of the rotary drum **11** is mounted a gear **23** (also see Fig. 2) which is in engagement with a gear **24** on the shaft of the rotary drum **2**. The rotary cutter **16** is driven by means of the chain or belt drive **25** or by means of a separate motor.

In the described example of the embodiment of the invention the depositing of the mouthpiece M onto the drum **2** and the depositing of the cigarettes Z onto the drum **11** is brought about by a direct feed from the magazines. Of course, provision can also be made to first have mouthpieces and cigarettes each placed on additional suction drums, which then in turn deposit mouthpieces and cigarettes, respectively, upon the drums **2** and **11**, respectively.

In the shown and described example of embodiment of the invention the connecting band **4***a* together with the double length filter mouthpiece adhering thereto is delivered at the point M3 to the drum **11** in such a manner that it comes to lie against the drum circumference in plane and flat condition. However, there might be provided grooves on these points on the circumference of the drum **11**, which grooves have a shallow depth for the reception of the connecting bands so that the connecting band when placed with the mouthpieces into these shallow grooves will be somewhat curved to surround the end portions of the two cigarettes by a fraction of their circumference.

The invention is not restricted to the details of the foregoing example. It will be apparent to those skilled in the art that variations and modifications may be made to the specific construction described in that example, without departing from the invention or the scope of the appended claims.

What I claim is:

1. A method of manufacturing filter mouthpiece cigarettes, including the steps in sequence of feeding to a circuitous pathway a filter mouthpiece having a length of twice the one of the filter mouthpiece in the complete cigarette, depositing upon the circumference of said mouthpiece while on said pathway a flat piece of adhesively coated connecting band so that the band extends beyond both ends of said mouthpiece, transferring said mouthpiece and connecting band to another circuitous pathway for reversing said mouthpiece filter with the connecting band so that the adhesive side is outermost, feeding onto said connecting band two axially spaced and axially alined cigarettes having an axial spacing of at least the length of said double length filter mouthpiece and moving both said two cigarettes during said feeding movement simultaneously transversely to their length toward said filter mouthpiece until the latter occupies the space formed between said two axially alined cigarettes and the latter engage the ends of the connecting band extending from the mouthpiece, wrapping said connecting band around the axially alined cigarettes and filter mouthpiece, and then severing the formed cigarette and mouthpiece assembly by cutting through the center of the filter mouthpiece, thereby forming two complete filter mouthpiece cigarettes.

2. A method of manufacturing filter mouthpiece cigarettes, including the steps in sequence of feeding to a circuitous pathway a filter mouthpiece having a length of twice the one of the filter mouthpiece in the completed cigarette, feeding to said pathway for being deposited on the circumference of said mouthpiece a flat piece of connecting band having an adhesive coating on one side so that the band extends beyond both ends of said mouthpiece, transferring said mouthpiece and connecting band to another circuitous pathway for reversing said mouthpiece filter with the connecting band so that the adhesive side is outermost, feeding two axially spaced and axially alined cigarettes having an axial spacing of at least the length of said double length filter mouthpiece and moving both said two cigarettes during said feeding movement simultaneously transversely to their length toward said filter mouthpiece until the latter occupies the space formed between said two axially alined cigarettes and the latter engage the ends of the connecting band extending from the mouthpiece, lengthwise moving said two cigarettes toward each other so that the ends adjacent the ends of the mouthpiece are caused to abut said ends of said mouthpiece, wrapping said connecting band around the axially alined cigarettes and filter mouthpiece, and then severing the formed cigarette and mouthpiece assembly by cutting through the center of the filter mouthpiece thereby forming two complete filter mouthpiece cigarettes.

3. A method of manufacturing filter mouthpiece cigarettes, the steps in sequence comprising: feeding a filter mouthpiece to a circuitous pathway, feeding to said pathway so as to adhere to the circumference of said mouthpiece a flat piece of connecting band having an adhesive coating on one side so that the band extends beyond both ends of said mouthpiece, transferring said mouthpiece and connecting band to another circuitous pathway for reversing said mouthpiece filter with the connecting band so that the adhesive side is outermost, feeding to the second pathway two axially spaced and axially alined cigarettes having an axial spacing of at least the length of said filter mouthpiece, and moving both said two cigarettes during said feeding movement simultaneously transversely to their length toward said filter mouthpiece until the latter occupies the space formed between said two axially alined cigarettes and the latter engage the ends of the connecting band extending from the mouthpiece, wrapping said connecting band around the axially alined cigarettes and filter mouthpiece, and then severing the formed cigarette and mouthpiece assembly by cutting through the filter mouthpiece thereby forming two complete filter mouthpiece cigarettes.

4. A method of manufacturing filter mouthpiece cigarettes, including the steps in sequence of feeding to a circuitous pathway a filter mouthpiece, feeding to said pathway and to the circumference of said mouthpiece a flat piece of adhesively coated connecting band so that the band extends beyond both ends of said mouthpiece with the adhesively coated side innermost, transferring said mouthpiece and band to another pathway to reverse the position of said mouthpiece and connecting band, feeding to said other circuitous pathway two axially spaced and axially alined cigarettes having an axial spacing of at least the length of said filter mouthpiece, and moving both said two cigarettes during said feeding movement simultaneously transversely to their length toward said filter mouthpiece until the latter occupies the space formed between said two axially alined cigarettes and the latter engage the ends of the connecting band extending from the mouthpiece, lengthwise moving said two cigarettes toward each other so that the ends adjacent the ends of the mouthpiece are caused to abut said ends of said mouthpiece, wrapping said connecting band around the axially alined cigarettes and filter mouthpiece, and then severing the formed cigarette and mouthpiece assembly by cutting through the filter mouthpiece thereby forming two complete filter mouthpiece cigarettes.

5. A method of manufacturing filter mouthpiece cigarettes, including the steps in sequence of feeding mouthpiece units of double length to a circuitous pathway, feeding adhesively coated connecting band pieces to said pathway and in timed relation with the feeding of said mouthpiece units so that said adhesively coated connecting band pieces will be united with said filter mouthpiece unit and be affixed to the periphery thereof such that the connecting band extends beyond the end of the filter mouth-

piece unit a slight distance, transferring said filter mouthpiece and united connecting band to another circuitous pathway to reverse the position of said connecting band and mouthpiece such that the adhesively coated side is outermost, feeding two axially aligned and spaced cigarettes to said second circuitous pathway with the spacing of the cigarettes equal to the length of said filter mouthpiece, depositing said spaced cigarettes on opposite sides of the filter mouthpiece in timed relation with its travel around said circuitous pathway so that the inner ends of the cigarettes will be deposited on the adhesively coated side of the connecting wrapper and the filter mouthpiece will occupy the space between the two cigarettes, moving said cigarettes axially during their depositing movement toward said mouthpiece, wrapping said connecting band around the axially aligned cigarettes and filter mouthpiece during their travel around the second circuitous pathway,

and finally severing the formed cigarette and mouthpiece assembly by cutting through the filter mouthpiece intermediate its ends thereby forming two complete filter mouthpiece cigarettes.

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