Dec. 16, 1958 K. KÖRBER 2,864,379

METHOD AND MEANS FOR MANUFACTURING FILTER MOUTHPIECE CIGARETTES

Filed June 22, 1954 3 Sheets-Sheet 1

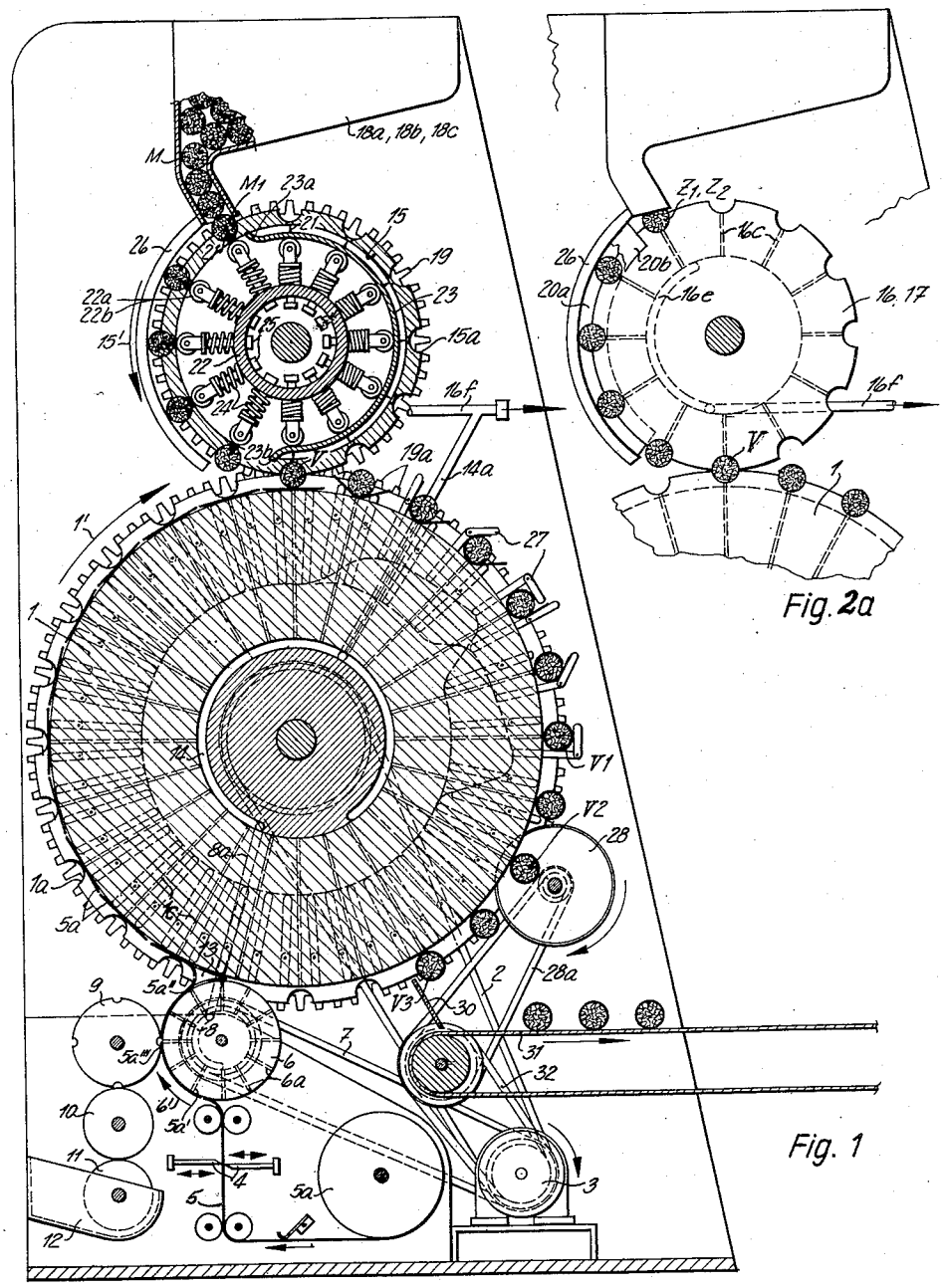


Fig. 1

Fig. 2a

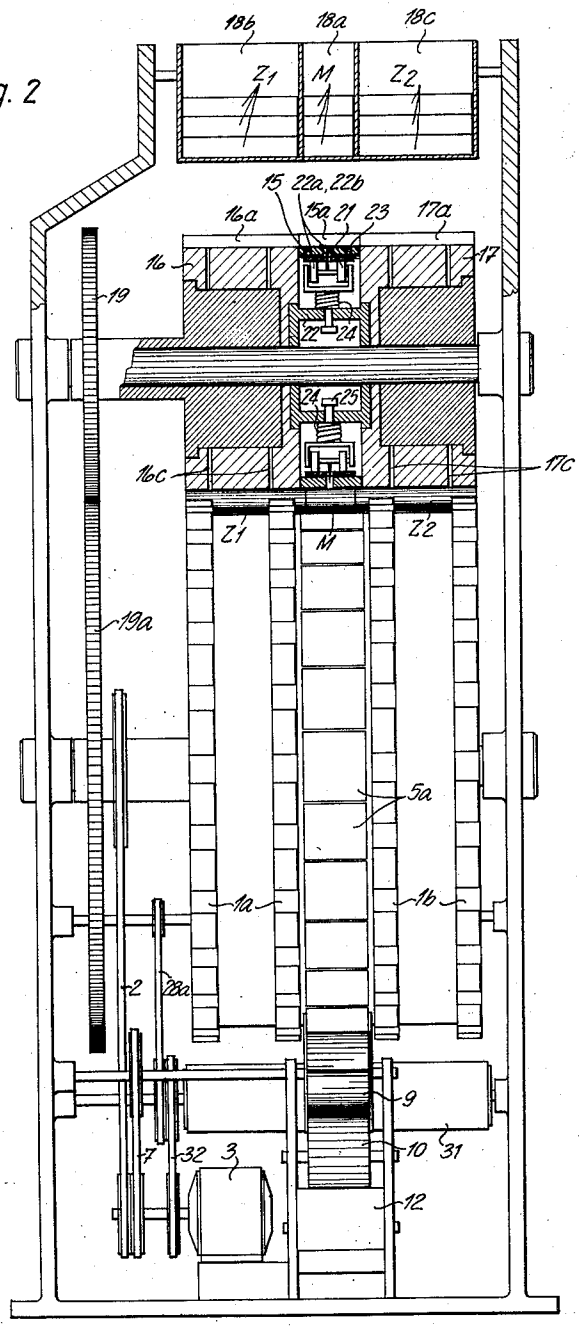
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Fig. 2



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Fig. 3

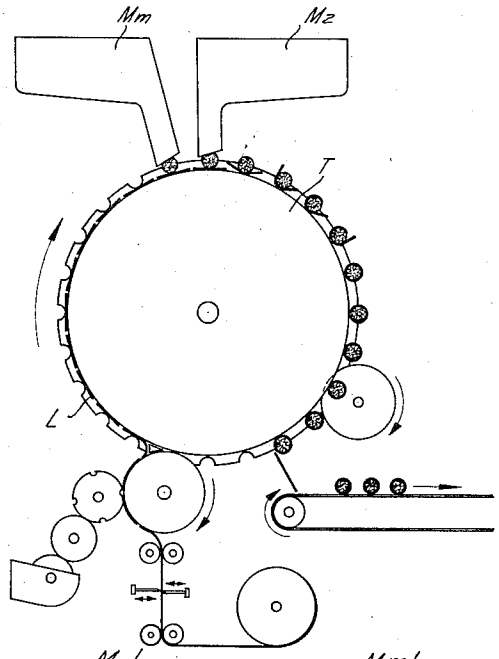
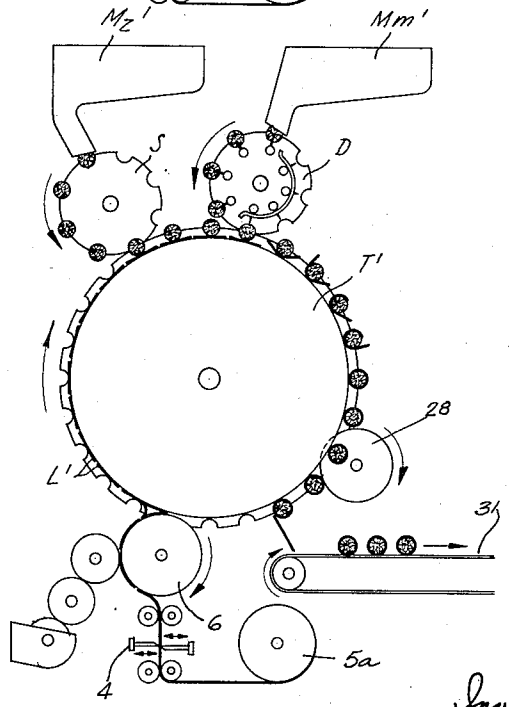


Fig. 4



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United States Patent Office

2,864,379

Patented Dec. 16, 1958

2,864,379

METHOD AND MEANS FOR MANUFACTURING FILTER MOUTHPIECE CIGARETTES

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Application June 22, 1954, Serial No. 438,512

Claims priority, application Germany September 22, 1953

3 Claims. (Cl. 131—94)

The invention relates to the manufacture of filter mouthpiece cigarettes.

Methods of manufacturing cigarettes or the like provided with filter mouthpieces are known, in which two pieces of tobacco rods wrapped in cigarette paper are cause to abut against the two ends of a mouthpiece portion of double length of the mouthpiece, whereupon a connecting band previously provided with an adhesive is then conveyed towards the joints formed in this cigarette-mouthpiece assemblage. The assemblages and connecting bands are then conducted to a folding device by means of which the connecting bands are wrapped around the joints in the manner of a cuff. When later the thus united tobacco rod-mouthpiece-assemblages are severed substantially midway of the mouthpieces, there are produced from each assemblage two ciagarettes or the like which at one of their ends are provided with a mouthpiece of standard length.

The conventional machines for carrying out these known methods require very many structural parts. Particular difficulties have been encountered in affixing the adhering connecting band to the joints in an accurately aligned manner.

An added drawback consists in this, that the connecting band is only retained on the cigarettes and mouthpieces, respectively, by its comparatively small adhesive surface when the cigarette-mouthpiece assemblage is conveyed towards the folding members, and said band, therefore, inherently has a tendency to become displaced, so that a perfect wrapping of the band around the assemblage is almost impossible.

It is an object of the present invention to eliminate these disadvantages of the conventional methods and devices by immovably retaining the connecting band itself on the rotating transport means and to in turn deposit cigarettes and mouthpieces on the connecting band, which is the opposite procedure followed in known methods wherein the cigarette and mouthpieces are retained on the revolving groove-drums by means of air suction and wherein the connecting bands are adhesively affixed from the outside so that they are left to themselves. The mentioned drawback thus is avoided by the method according to the present invention and the additional advantage is gained that the production of tobacco rods (cigarettes or the like) provided with mouthpieces can take place on one and the same rotary member.

In accordance with the present invention, the tobacco rod-filter mouthpiece assemblages may be deposited from a multiple magazine on the immovable connecting band simultaneously or else successively, either first the tobacco rods and then between these the mouthpieces, or vice versa, first the mouthpieces and then against them the tobacco rods. Furthermore, the depositing on the connecting band may be done directly from the magazines or indirectly via transmission members.

The invention will now be described more particularly by way of examples in connection with machines, which are suitable for carrying out the method according to the

invention, and with reference to the accompanying drawings, in which:

Fig. 1 is a vertical sectional view.

Fig. 2 is a vertical sectional view at right angles to Fig. 1 of a machine, in which the tobacco rods and mouthpieces are discharged from a multiple magazine at the same time, and the filter mouthpiece portions disposed therebetween are deposited on the connecting band by the intermediary of a pin drum.

Fig. 2*a* represents a side view of the top portion of the machine shown in Fig. 1.

Fig. 3 is a diagrammatic view of an embodiment of the invention in which first the mouthpiece portion and then at both ends of the latter the tobacco rods are directly deposited on the stationary connecting band.

Fig. 4 illustrates the same arrangement as shown in Fig. 3 but differing in that the depositing of the cigarettes and mouthpiece portions is indirectly brought about over grooved drums.

Referring to Figs. 1 and 2 of the drawings, the rotating drum 1 is set in motion in direction of the arrow 1' by a motor 3 by means of a belt or chain drive 2. At both ends of the drum 1 its circumferential surface is provided with grooves 1*a* and 1*b* for receiving the tobacco rods (Fig. 2), while in the middle of the drum its circumferential area is smooth and without any grooves and serves for the reception of the connecting bands 5*a*.

These connecting bands 5*a* are severed by means of a cutting device 4 known per se, from a paper tape 5 which unwinds from a roll 5*a* and is provided with adhesive on one of its sides when traveling towards the drum 1. For this purpose there is provided a suction drum 6 driven by the motor 3 by means of a drive 7 in the direction of the arrow 6'. The drum 6 is provided with suction ducts 6*a* opening into the drum surface. Said ducts 6 during the rotary movement of the drum from the place 5*a'* of receiving the connecting band to the place 5*a''* of delivering it to the drum 1 are in communication with a stationary suction duct 8 and in this manner the connecting bands are held on the circumferential area of the drum 6. The suction duct 8 is connected to the suction pipe 8*a*. At the place 5*a'''* the connecting band is provided with an adhesive by a drum 9 carrying adhesive substance, which drum 9 over the drums 10 and 11 is supplied with adhesive contained in the receptacle 12.

At the place 5'' where the suction duct 8 terminates, the connecting band is taken off the drum 6 by means of a scraping plate 13 and deposited on the peripheral surface of the drum 1 substantially in the grooveless center portion of same. Also into this central section of the drum 1 suction ducts 1*c* open which retain the connecting bands substantially midway of their length on the periphery of the drum 1. The suction ducts 1*c* are in communication with a suction pipe 14*a* by means of the stationary suction duct 14. By rotating the drum 1 in the direction of the arrow 1' the connecting bands are now conveyed to the place V, where the tobacco rods and mouthpieces are deposited on the respective connecting band.

For this purpose, there is provided above this place V in the center plane of the drum 1 a transfer member 15 for the mouthpiece portions rotating in the direction of the arrow 15', into the particulars of which member we shall enter later on, and to each of the two sides of which member 15 there is arranged a transfer drum 16 and 17, respectively, for the cigarettes Z1 which are arranged in grooves 16*a* and 17*a*, respectively, provided on the circumference of the drums 16 and 17 (see Fig. 2 and also compare Fig. 2*a*, which represents a side view of the upper part of Fig. 1). The common shaft of these three rotary members 15, 16 and 17 is provided with a gear 19,

which is in engagement with a gear 19*a* mounted on the shaft of the drum 1.

A magazine comprising three chambers 18*a*, 18*b*, 18*c* (Fig. 2) is arranged above the member 15 and the drums 16 and 17. The mouthpiece portions M of double length of the mouthpiece of a completed cigarette are stored in the middle chamber 18*a*, while the cigarettes Z1 and Z2 are in the two lateral chambers 18*b* and 18*c*. The cigarettes Z1, Z2 from their respective magazine chambers 18*b* and 18*c* are transferred into the grooves 16*a* and 16*b*, respectively, of the drums 16 and 17, respectively. Ducts 16*c* and 17*c*, respectively, which are subjected to suction action, when connected to the stationary suction ducts 16*c* (see Fig. 1*a*) which in turn are in communication with the suction pipe 16*f*, open in known manner in the bottom of the grooves 16*a* and 16*b* of the drums 16 and 17.

The cigarettes are pushed by means of the guide plates 20*a* and 20*b* into axial alignment on the drums 16 and 17 such that their distance from each other exactly corresponds to the length of the mouthpiece portion when the cigarettes are delivered at the place V to the drum 1, on which the mouthpiece portions are to be laterally inserted between the adjacent end portions of the cigarettes. The rotary member 15, which is provided with grooves 15*a* on its surface, is for this purpose provided in its interior with radially movable pointed pins 21 which are movably mounted in an annular retainer 22 and at both sides are provided each with a little guide wheel 22*a* and 22*b*, respectively, which are controlled by a stationary rail 23. The pins 21 are subjected to the influence of springs 24 which have the tendency to press the pins 21 radially outwardly through the bottoms of the grooves in the drums 15 in which positions said pins are held by abutments 25 provided on the shaft ends of the pins.

When a pin of the member 15 rotating in the direction of the arrow 15' has been passed underneath the discharge opening of the middle magazine chamber 18*a*, it slides off from the end portion 23*a* of the rail 23, snaps outwardly in radial direction and pierces the mouthpiece portion M1 taken from the discharge end of the magazine chamber 18*a* and transports this piece below a guide rail 26 to the place V on which the other end 23*b* of the rail starts again. When approaching the end 23*b* of this rail, the pin is again retracted from the mouthpiece portion after the latter has been inserted into the space between two cigarettes and has beeen deposited on the connecting band.

During the traveling motion from the place V to the place V1 the wrapping of the connecting band around the mouthpiece portion and abutting end portions of the cigarettes takes place. This is effected by means of folding elements 27, the particulars of which are disclosed in United States patent application of B. Schubert, Serial No. 338,360, filed February 24, 1953; now Patent No. 2,714,384, granted August 2, 1955. After the tobacco rods and mouthpiece portions have been joined in this manner, they are severed at the place V2 by means of a circular cutter 28 driven by the motor 3 by means of a chain or belt drive 28*a*. The now completed cigarettes are provided with a mouthpiece having half the length of the mouthpiece portions M. These mouthpiece cigarettes are conveyed by the drum 1 to the place V3 where the suction duct 14 terminates so that the mouthpiece cigarettes can be deposited by a chute 30 onto a conveyor belt 31 on which they may be delivered to their place of final destination. The conveyor belt 31 is driven by the motor 3 through a chain or belt drive 32.

Fig. 3 shows diagrammatically a modification of the machine of the invention. The modification consists in this, that for cigarettes and mouthpiece portions there are provided spaced magazines, namely magazines Mz for cigarettes and magazines M*m* for mouthpiece portions.

According to this modified arrangement, there will be first transferred the mouthpiece portions from the magazine M*m* onto the connecting bands L, disposed on the drum T, and then somewhat later the cigarettes are transferred to the drum 1 and placed next to both ends of the mouthpiece portions.

In the modification according to Fig. 4, the procedure is reversed, first the cigarettes from the magazine Mz' are deposited and then the mouthpiece from the magazine M*m'* is transferred to the connecting bands L' placed on the drum T' between two axially spaced cigarettes. The transfer operation takes place according to Fig. 4 in an indirect manner, namely in a manner according to Figs. 1 and 2 in which the transfer of the cigarettes takes place by means of a grooved drum S and the transfer of the mouthpiece portion by means of a pin drum D.

In place of the pin drum 15, there may also be used a drum having suction ducts in known manner.

It will be appreciated by those skilled in the art that the invention is not limited to the details of the foregoing examples of embodiments, except as expressed in the appended claims.

What I claim is:

1. In a method of manufacturing filter mouthpiece cigarettes, the steps in sequence of providing connecting bands having an adhesive coating on one side and moving the same spaced from each other in flat condition continuously in one direction in a circular path, depositing upon each of said connecting bands during its movement in said circular path, first two cigarettes in axial spaced and axial alignment, and thereafter a filter mouthpiece portion into the space between said two axial aligned cigarettes and positioned transversely to the direction of movement of said connecting band and in axial alinement with said two cigarettes, the length of the space between said two cigarettes being equal to the length of the filter mouthpiece portions, wrapping each connecting band around said axially aligned filter mouthpiece portion and the two ends of the cigarettes abutting the ends of said mouthpiece portion during the continuous movement of said connecting bands and then cutting during such continuous movement said filter mouthpiece portion into two portions, thereby forming two separate filter mouthpiece cigarettes.

2. In a method of manufacturing filter mouthpiece cigarettes, the steps in sequence of providing adhesively coated connecting bands with a coating on one side only, conveying said bands about a circuitous pathway in spaced relation from each other and in a substantially flat condition, depositing upon the adhesive face of said connecting bands while in said circuitous pathway two cigarettes arranged in axially alined spaced relation so that the inner ends of said cigarettes will contact the adhesive faces of said connecting bands causing said cigarettes and bands to be moved about said circuitous pathway, depositing filter mouthpiece units between and in alinement with said axially spaced cigarettes, the length of the space between said two cigarettes being equal to the length of the filter mouthpiece portions, wrapping each connecting band around said alined filter mouthpiece portion and the inner ends of the cigarettes abutting the ends of said mouthpieces during the continuous movement of said connecting bands about said circuitous pathway, and finally cutting during such continuous movement said filter mouthpiece portion into two portions, thereby forming two separate filter mouthpiece cigarettes.

3. In a method of manufacturing filter mouthpiece cigarettes, the steps in sequence of feeding connecting bands having an adhesive coating on one side to a circular pathway, moving said connecting bands along said pathway continuously in one direction, depositing upon each of said connecting bands during its movement in said circular pathway, first two cigarettes arranged in axially alined spaced relation one from the other, next depositing upon said connecting band a filter mouthpiece

of a length corresponding to the distance between said cigarettes such that the two cigarettes and mouthpiece are deposited one after the other upon the adhesive coated connecting band so that the ends of the cigarettes and filter mouthpiece are in close contact with one another, wrapping each connecting band around said axially alined cigarettes and filter mouthpiece portion during the continuous movement of said connecting bands, cigarettes and mouthpiece portions about said circuitous pathway, and finally cutting during such continuous movement said filter mouthpiece portion to divide the same and thus form two separate individual filter mouthpiece cigarettes.

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