

June 18, 1963

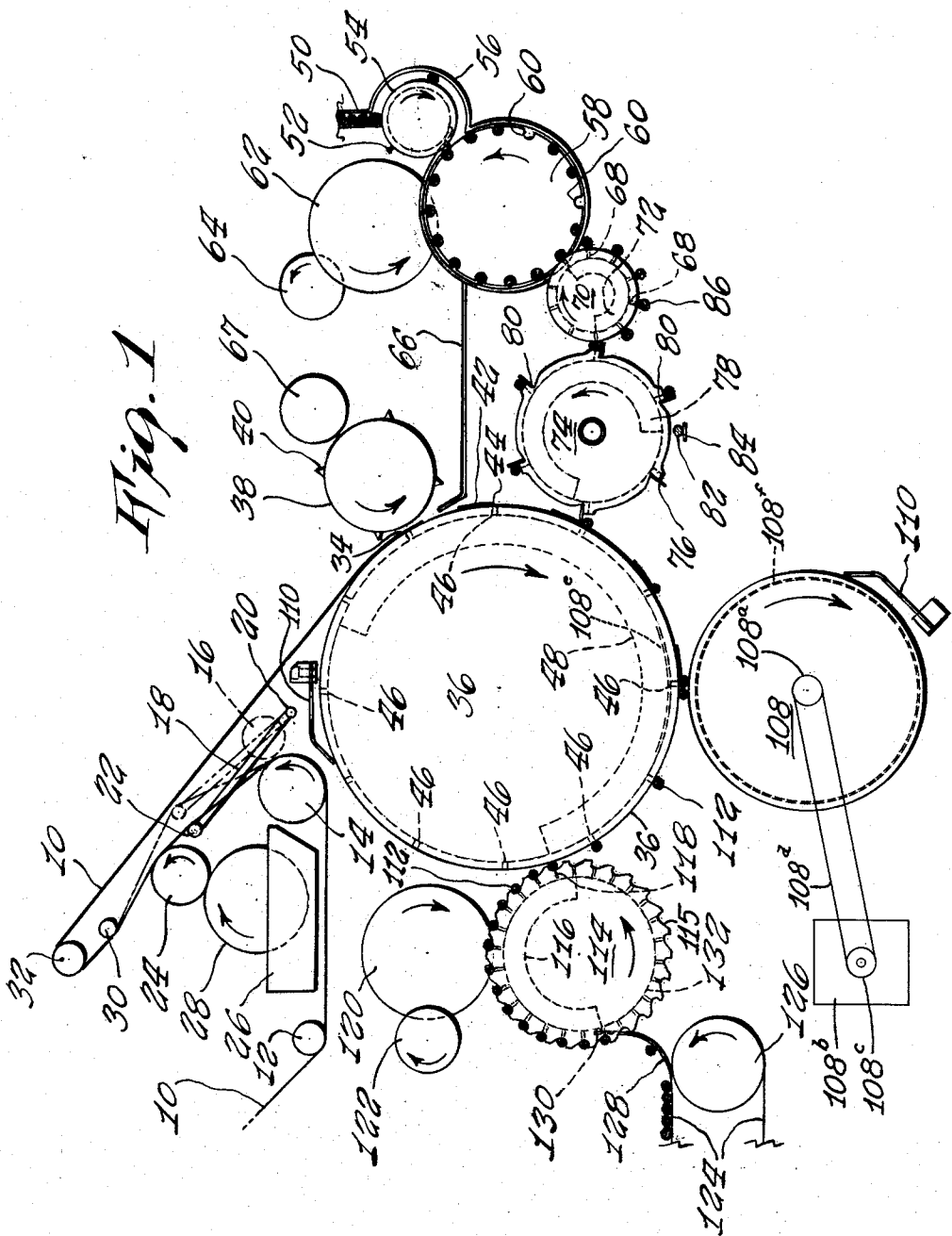
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3,094,128

MOUTHPIECE CIGARETTE MAKING MACHINE

Filed Oct. 27, 1958

3 Sheets-Sheet 1



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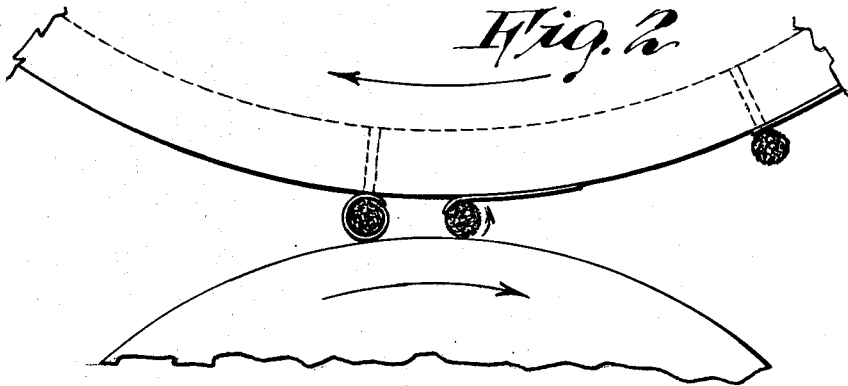
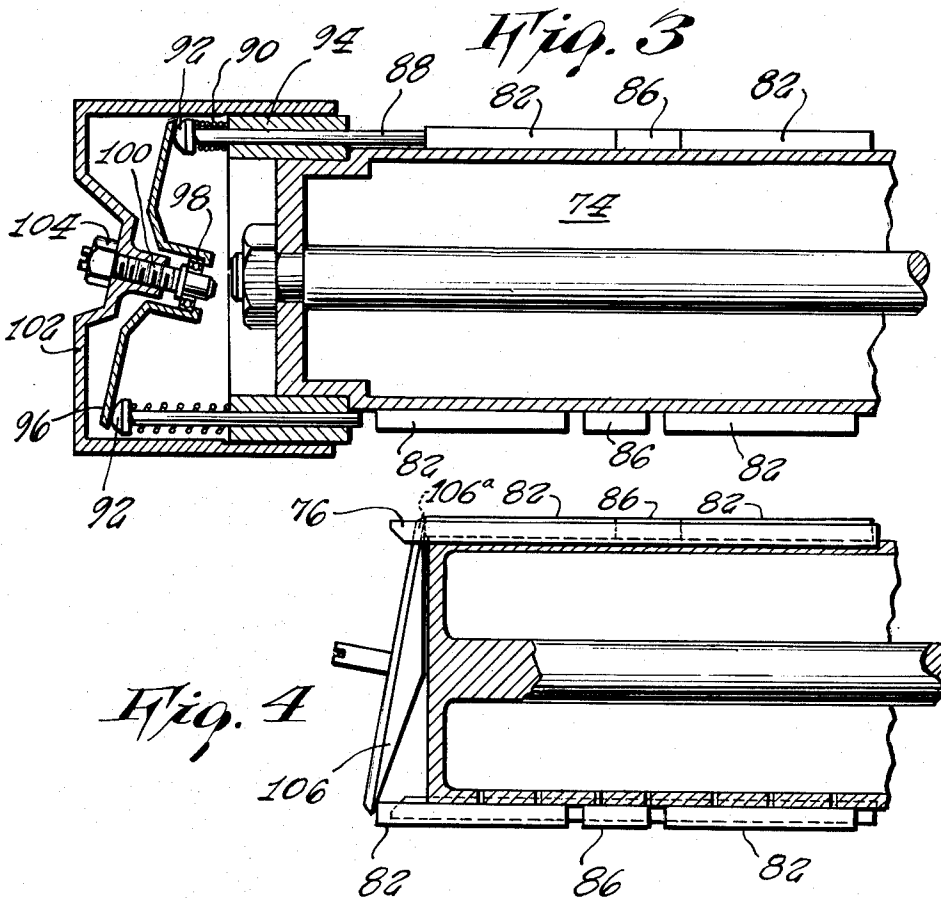
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MOUTHPIECE CIGARETTE MAKING MACHINE

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3 Sheets-Sheet 2



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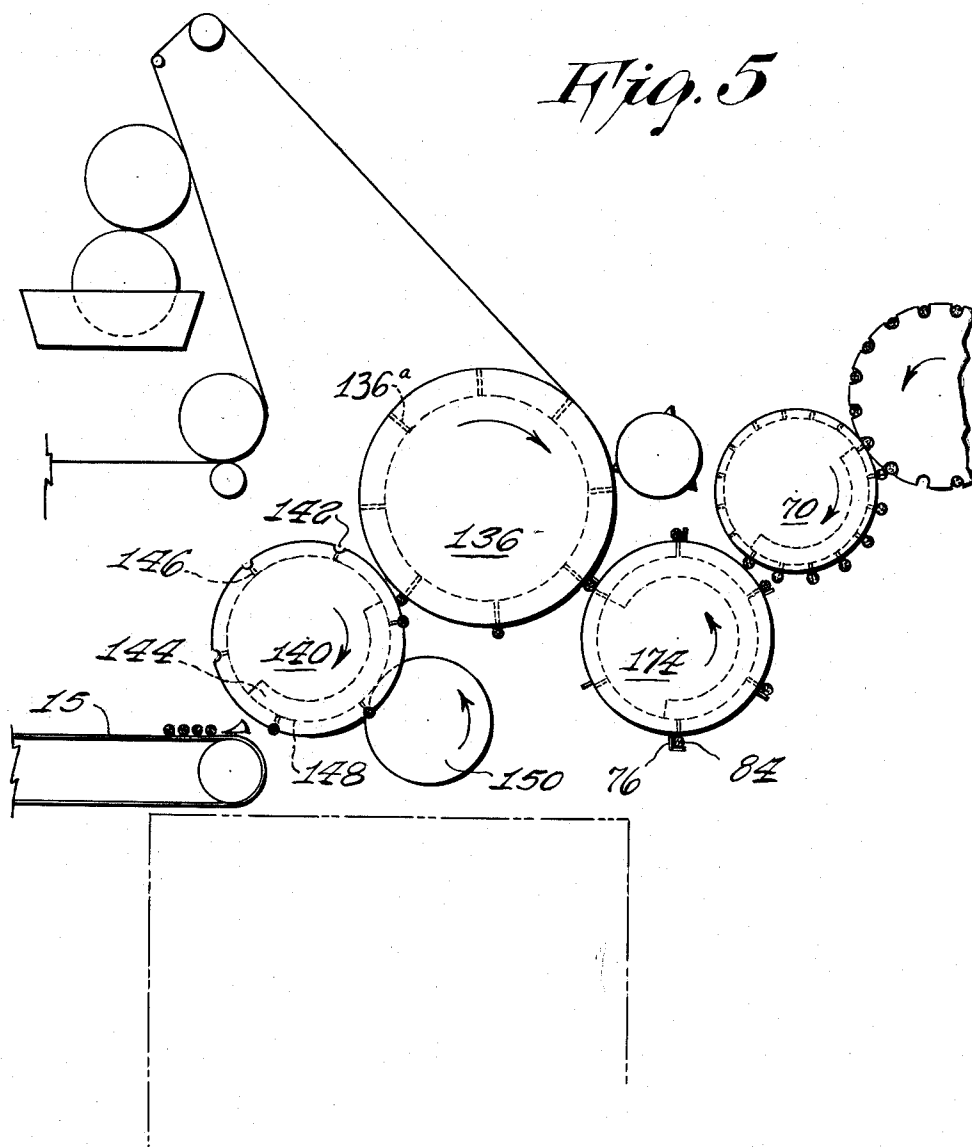
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1. MOUTHPIECE CIGARETTE MAKING MACHINE

Filed Oct. 27, 1958

3 Sheets-Sheet 3



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3,094,128
MOUTHPIECE CIGARETTE MAKING MACHINE
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Filed Oct. 27, 1958, Ser. No. 769,822
14 Claims. (Cl. 131-94)

This invention constitutes an improvement and continuation-in-part of my co-pending application, Serial No. 509,293, filed May 18, 1955, now Patent No. 3,036,581, granted May 29, 1962, and more particularly relates to a machine or attachment for making mouthpiece cigarettes. Various mouthpiece cigarette making machines have been developed heretofore. Some have been of very complex construction, others have had a deleterious effect on the cigarette when a mouthpiece is attached thereto.

It is the purpose of this invention to provide a mouthpiece cigarette making machine which will be of a simplified design and which will be capable of operating at a high rate of speed and still make acceptable cigarettes.

Another object is to provide a mouthpiece cigarette making machine which will apply uniting bands about cigarettes between contra-rotating drums.

A further object is to furnish a uniting band applying device wherein the operating surfaces which are liable to become contaminated with adhesive may be continuously cleared whilst the machine is in operation.

A further object is to provide an improved cigarette deflector for a cigarette making machine which will employ pusher blades and suction to decelerate a cigarette.

Another object is to provide a cam surface or swash plate for imparting an axial movement to cigarette lengths and filters which will also act as an aligning device for moving the cigarette lengths and filters together.

Another object is to provide means whereby the collation of the major constituent parts of a filter tipped cigarette is made on the cigarette machine deflector.

Another objective is to apply the cigarette assembly to the leading edge of the uniting band material in advance of the rolling operation in order to obtain firm adhesion along the edge to insure that it will not strip off when the rolling is commenced.

Another objective is to apply the cigarette assembly to the leading edge of the uniting material patch in advance of the rolling operation whilst the assemblage is held in close abutment under axial pressure, and to hold the parts in position for a sufficient length of time for the patch to become firmly adhered to the parts so that they cannot spread axially when rolled, thus making end guides unnecessary at the rolling station.

Other objects and features of the invention will appear as the description of the particular physical embodiment selected to illustrate the invention progresses. In the accompanying drawings, which form a part of this specification, like characters of reference have been applied to corresponding parts throughout the several views which make up the drawings.

FIGURE 1 shows a schematic end elevation of my mouthpiece cigarette making machine.

FIGURE 2 shows a sectional detail of the actual application of a uniting band about the assembly.

FIGURE 3 is a detail showing an aligning mechanism for moving the cigarette lengths and mouthpiece into contiguous end to end arrangement whilst they are carried on the cigarette machine deflector.

FIGURE 4 shows an alternative method for aligning or plowing the cigarette length components into end to end relationship whilst they are carried on the cigarette machine deflector.

FIGURE 5 shows another method of handling the

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cigarettes after the assembly has been completely wrapped in the uniting band.

Referring to FIGURE 1, uniting band material 10 is fed from a suitable source of supply around a guide pulley 12 and a feed roller 14 which rotates at a predetermined rate of speed. Drive roller 16 is supported on the lever arm 18 which is pivoted at one end on the pivot 20 and carries a uniting band engaging guide roller 22 at its opposite end. When the uniting band roller is in its lower position, as shown in full lines, the feed roller 16 will also be in its lower position. When the feed roller 16 is in its lower position it will press the uniting band material 10 firmly against the driven drum 14 thereby causing the driven drum 14 to draw uniting band material 10 from the source of supply at a predetermined rate.

The uniting band material passes over an adhesive applying wheel 24 which is driven in the direction indicated by the arrow at a predetermined rate, so as to apply adhesive to one side of the uniting band material 10. An adhesive pot 26 holds a suitable supply of adhesive and has an adhesive pickup wheel 28 rotating in the direction indicated by the arrow so that the lower surface of the pickup wheel picks up a layer of the adhesive from which the transfer roller picks up and transfers a predetermined amount of the adhesive to the uniting band 10.

If the mouthpiece cigarette making machine for any reason is stopped, the lever arm 18 is moved either automatically or manually to the position shown in dotted lines. When this is done it moves the uniting band 10 out of contact with the adhesive carrying roller 24 and simultaneously moves the driven roller 16 out of feeding engagement with the uniting band 10. When this occurs the roller 14 rotates next to the uniting band but does not cause the uniting band material 10 to be drawn from its source of supply.

The adhesive bearing uniting band 10, after it moves past the adhesive transfer roller 24 passes over the guide rollers 30 and 32. The leading end 34 of the band 10 rests on top of the suction drum 36. The suction drum 36 is rotated at a predetermined rate of speed, in the direction indicated by the arrow, and at a speed which is faster than the peripheral speed of the band feed drum 14. As a consequence there will be a relative slippage between the leading end of uniting band material 34 and the suction drum 36 in a manner similar to that disclosed in my co-pending Patent No. 3,036,581.

A suitable cutting device 38 having one or more cutters 40 rotates in synchronism with the suction drum 36 and the feed drum 14 so as to sever a predetermined length of uniting band material 42 against the drum 36 from the leading end 34 of the uniting band material 10. The time of cutting is so arranged that the leading cut edge 44 of the uniting band material 42 extends across a series of suction holes 46. It will be noted that the exterior surface of the uniting band material 42 has adhesive thereon. The suction drum 36 has drilled through its surface at regular intervals, a pattern of holes 46 designed to hold in place the uniting band material 42 and the cigarette assembly. The suction holes 46 connect with the interior of the drum. A stationary suction shoe 48 determines the area over which suction is applied through holes 46. The brush 67 brushes any scrap material from the knife carrying drum 38 into the collecting pan 66.

Plug material may be fed from a suitable source of supply such as the chute 50 in sextuple lengths.

I have shown how a multiple length mouthpiece subdividing apparatus such as that shown in my co-pending application, Serial No. 730,223, filed April 22, 1958, may be used to cut the multiple length mouthpiece material into the lengths desired. The feed blades 52 remove one

multiple length plug at a time from chute 50. The blades 52 are carried by a feed roller 54 which rotates in the direction indicated by the arrow. A semi-circular concave 56 surrounds the path of travel of the blades 52 and supports the sextuple length of mouthpiece material as it is advanced by blades 52 of the plug feeding roller 54.

The blades 52 feed sextuple lengths into non-successive slots formed in the plug conveying and subdividing drum 58. The plug conveying and subdividing drum 58 is driven in synchronism with the uniting band suction drum 36 and has a number of conveying pockets which is determined in the manner described in my co-pending application, Serial No. 730,223. The drum 58 is driven at a speed which will cause sextuple lengths of mouthpiece material to be fed into empty pockets 60 as they occur on the plug conveying drum 58. A cutter 62, rotating in the direction indicated by the arrow, severs a subdivision of plug material of the length desired from one end of the multiple length mouthpiece material. The cutter 62 is sharpened by a suitable sharpener 64.

A blower or other suitable means, as shown in my co-pending application, Serial No. 730,223, blows or pushes all of the filter plugs remaining in the flutes 60 up against a suitable stop (not shown) immediately prior to the plug moving through the knife 62 so that one end will be severed in the length desired. The severed length is then conveyed with the drum 58 to discharge station which is tangential to the suction transfer drum 70. A suction shoe 72 provides suction for the holes 68 when they pass in front of the suction shoe 72.

When the severed plug length reaches the discharge station, which is located at one end of the suction shoe 72, the drums 58 and 70 travel together with the plug between them so that the plug is pressed tightly against the suction holes 68, suction will draw air through the holes 68 thus removing the severed plug length from the flute 60 and securing it to the periphery of the drum 70 by means of the suction holes 68. If the severed plug length so removed happens to be the last severed length of plug material, the flute 60 will be empty and when it reaches the feed roller 54 a new multiple length of material will be discharged into the fluted pocket 60 to be subdivided in the manner described above.

If there still remains multiple lengths of mouthpiece material in the flute the remaining multiple length of mouthpiece material will be conveyed by the drum 58 past the feed drum 54 without having any additional multiple length mouthpiece material placed in the pocket and before it reaches the cutting knife 62 a blower or other suitable means not shown, but described heretofore and shown in my co-pending application, Serial No. 730,223, will again move the mouthpiece material to one end of the flute 60 prior to cutting so that the desired length of mouthpiece material is severed.

When the severed length of mouthpiece material has been transferred from pocket 60 onto the receiving holes 68 of the transfer drum 70 it will be held there by suction and conveyed in the direction indicated by the arrow. When the severed mouthpiece reaches the position at the opposite end of shoe 72 an assembly drum 74 carrying the deflector blades 76 comes in contact with the severed length of plug material and picks up the plug material in between the pair of spaced cut lengths of cigarette rod it had previously picked up.

The transfer and deflecting drum 74 has a suction shoe 78 which draws air through the holes 80 whenever these holes are in front of the suction shoe 78. Cut lengths of cigarettes 82 are fed axially in axially spaced formation on a conventional conveyor tape 84 from a cigarette making machine and are deflected laterally by the deflector blades 76 which have the suction holes 80 immediately in front of each blade 76. The axial movement of the cut spaced lengths of cigarettes 82 is decelerated by the suction grip effected by the suction holes 80 in front of the pusher blades 76 and also by the pressure of the

pusher blades 76 moving against the cut lengths of cigarette rods 82.

The suction assembly drum 74, rotating in the direction indicated by the arrow, carries the two axially spaced cut lengths of cigarette rod in the direction indicated by the arrow. The two lengths of cigarette material are held in the corners formed by the blades 76 and the periphery of the drum 74 by the suction effected by the suction shoe 78 through holes 80. The drum 74 rotates at a faster rate of speed than the transfer drum 70 so that when the two lengths of cigarette material reach a point opposite to the drum 70 there will have been positioned between the two lengths of cigarette material, a double length of plug material 86. At this point the suction shoe 72 will cut off suction from the holes 68 and the blades 76 will remove the double length filter 86 from the drum 70 so that the holes 80 of transfer drum 74 will draw the double length plug into the corners formed by the blades 76 and the periphery of the drum 74 in exact alignment with the cigarettes already there. The assembly will then be conveyed by the transfer drum 74.

After the double length mouthpiece 86 is inserted between the two axially spaced cut lengths of cigarette material 82, they are brought into contact with an axial abutting device such as pusher pins 88 shown in FIGURE 3. These pusher pins 88 are normally held in retracted position by means of springs 90 pushing between the heads 92 of the pin and the supporting ring 94 which is carried on the end of the drum 74. As the drum 74 rotates in the direction indicated by the arrow it causes the retracted pin, having its head end riding against the swash plate surface 96, to be pushed inwardly by the angle of the plate. This inward movement of the pin 88 brings it into contact with the end cigarette length of the assembly that is held in place by the suction holes 80. The inward pressure of pins 88 pushes the cut lengths of cigarettes 82 into an abutting contact with the mouthpiece 86 by pushing from one end as shown in FIGURE 3, the parts sliding over the suction holes which hold them in alignment in the corner formed by the blade 76 and the periphery of the drum 74. The swash plate 96 is rotatably mounted on a suitable bearing 98 carried by an adjustable screw 100 threaded in a stationary bracket 102. The screw 100 is held in its setting by a locknut 104 and by turning this screw 100 the position of the swash plate may be changed to change the position to which the assembly is finally pushed by pins 88.

I have shown in FIGURE 4 another embodiment of a simplified form of aligning device. In this case the aligning plate 106 which is of conical form, engages with the ends of the cigarettes 82 and pushes them into abutting contact with each other as shown in FIGURE 4. The periphery of cone 106 has suitable slots 106a formed therein which engage with the pusher blades 76 so that rotary movement is imparted to cone 106 by blades 76 so that the cone 106 rotates in time with the transfer wheel 74. Axial adjustment is made in the manner described in relation to FIGURE 3.

When the aligned assembly reaches a point opposite to the suction drum 36, the assembly will be opposite to the suction holes 46. The spacing between the drums 74 and 36 is such that when the cigarette assembly reaches the point of tangency it is pressed with the desired force against the leading edge of the uniting band material 42 where it is held in position on drum 36 by suction applied through holes 46, the suction through holes 80 in drum 74 being cut off at this point by means of shoe 78, thus permitting the transfer of the assembly from drum 74 to drum 36 after being tightly pressed against the uniting band material 42. In this way the assembly is brought into direct contact with the lead end of the severed uniting band 42 which has adhesive thereon with any desired radial pressure depending upon the adjustable space between the drums 74 and 36, and the suction holes 46 holds the assembly securely to the drum 36

maintaining radial pressure against the uniting band 42 and the relative axial position of the component parts of the cigarette assembly. When the assembly held by the holes 46 approaches the rolling drum 108, which rotates in a direction indicated by the arrow, diametrically opposite sides of the assembly are frictionally engaged by the oppositely moving roller surfaces, which cause the assembly to spin under pressure exerted by the rolls, to tightly wrap the uniting band material 42 around the assembly as shown in FIGURE 2.

The drum 36 has a peripheral speed slightly greater than that of drum 108 so that as the assembly spins it also moves in space in the same direction as the surface of drum 36 to slowly pass between the drums to an exit point opposite to the entry point. This is accomplished by having a pulley 108a fixedly secured to rolling drum 108 and having a variable speed drive 108b with a pulley 108c on the shaft of the variable speed drive and a belt 108d trained on the pulleys 108a and 108c so that the variable speed drive can rotate the rolling drum at different peripheral speeds. In this way the movement of the cigarette assembly through the mechanism continues uninterruptedly in the same direction, but at a slower velocity during the rolling operation.

The relative velocities of the drums 36 and 108 is arranged so that the cigarette assembly which is completely rolled arrives at the exit point at the same time as does the series of holes 46 which has just delivered the succeeding assembly to the entry point between the rolls 36 and 108. At the exit point, the completely rolled assembly is between divergent surfaces of the drums at a point where it just ceases to be gripped between them, when the series of holes 46 which has just delivered the succeeding assembly to the entry point between rolls 36 and 108 arrives. The assembly is therefore free to be attracted to the series of holes 46 by virtue of the suction applied therethrough from the interior of the drum 36. This takes place, to carry the assembly away on the periphery of the drum 36 in a specific timed relation thereto as determined by the angular position of the holes 46.

It will be appreciated that according to this system of working there will be, for a very brief interval of the complete cycle, two cigarettes rolling between the drums 36 and 108 simultaneously and that by far the largest proportion of the time, only one assembly will be rolling.

By increasing the diameters of the drums 36 and 108 so that the space between them is substantially parallel for a longer dimension and by correctly arranging their relative velocities it is possible to roll a plurality of assemblies simultaneously which would increase the relative rolling time and so make possible higher production speeds.

In order to change the above described mechanism so that it rolled two cigarettes simultaneously for the larger proportion of the cycle and three for a short time, the velocity of the roll 108 would be increased slightly from that used previously but it would still be slower than that of roller 36. This would result in the rolling assembly progressing through the rolling station at a slower relative rate.

Under these circumstances, an assembly would be delivered to the entry between drums 36 and 108 as before, and rolling would commence. Further movement of the drums would cause the series of holes 46 which had just delivered an assembly to advance to the previous cigarette which they would meet about half way through the rolling cycle for that cigarette, when it be in the region of the point of minimum dimension between the drums. Here the cigarette would be gripped tightly between the drums whilst rolling, so that the force exerted by the suction through the series of holes 46 would have no influence on the cigarette and would so pass it by as the movement proceeded, to eventually reach the point

of exit simultaneously with the arrival there of the yet previous assembly. Here, as hitherto, the point of exit is defined as that point between the divergent surfaces of the drums where the assembly ceases to be gripped by them so that upon the arrival of the series of holes 46 the assembly at the exit position is free to be picked up by the suction through these holes to be carried away in timed relationship with the drum 36 as before.

In order to assist in the drying of the adhesive on the uniting bands 42 after it is wrapped around the assembly, heat may be applied in a known means to either drum 36 or drum 108. This is accomplished by having an electrically heated curved plate 108e disposed in the shoe 48 centrally over the cigarette assembly and slightly longer than a uniting band and an electrically heated coil 108f mounted inside the rolling drum 108 and disposed centrally of the cigarette assembly and slightly longer than a uniting band. Any suitable means may be provided for supplying the heating coil 108f with electrical current. For example, the wires leading from the coil may be connected to contact rings which ride against suitable shoes carrying electric current.

It will be appreciated, if a thermo plastic uniting band material is used, the paste applying mechanism shown in FIG. 1 will not be used and instead the heated drum 36 will cause the thermo plastic band to become tacky and adhesive to facilitate its application about an assembly.

The scrapers 110 are provided to continuously scrape both rollers 36 and 108 whilst the machine is in operation. In this way any adhesive, pieces of uniting band material, pieces of cigarette or filter which may adhere to the surface of these drums is immediately removed, preserving constant rolling conditions at all times as provided by the constantly clean rolling surfaces.

The completely rolled and united assembly 112 is then carried by the holes 46, held by the suction in shoe 48, to a cutting drum 114 having a plurality of stripper pockets 115. The cutting drum has a suction shoe 116 which causes air to be drawn through the holes 118 in the bottom of the pockets 115 which picks up the rolled assembly 112 from the suction drum 36 where suction is cut off from the holes 46 by the termination of the shoe 48. At this point the suction holes 118 take over and carry with them the rolled assembly 112 into the range of action of the knife 120 which rotates in the direction indicated by the arrow and is sharpened by the sharpeners 122.

If desired a suitable aligning device such as a fixed plow contacting the end of the assembly could be employed to assure an exact alignment of the rolled assembly 112 so that the double length mouthpiece cigarette will be cut exactly in half. The severed lengths of mouthpiece cigarettes are then discharged from the cutting drum 114 onto a suitable collecting belt 124 which travels over the pulley 126. The chute 128 may have suitable stripping fingers 130 which helps the cigarettes to be removed from the drum 114 and project in suitable slots 132 formed in the drum 114.

The invention hereinabove described may therefore be varied in construction within the scope of the claims, for the particular device selected to illustrate the invention is but one of many possible embodiments of the same.

Another variant of this invention is shown in FIGURE 5.

The cigarettes and filters are assembled on deflector 174 and applied to the leading edge of the gummed uniting band material on drum 136 having perforations 136a in a manner exactly similar to that described in relation to FIGURE 1.

The counter rotating drum 140 in this case is provided with flutes 142 around its periphery and with an internal vacuum shoe 144 connected to these flutes 142 by means of holes 146.

The drum 140 is proportioned and driven so that its peripheral velocity is substantially the same as that of drum 136. Thus, when the cigarette assemblies are being rolled they do not progress between the drums, but remain substantially stationary in space. The drum 140 is timed relative to the drum 136 so that the cigarette assembly and uniting band material arrive in the commencement to roll position on the periphery of drum 140 just after the previous flute 142 has passed the rolling station. Further movement of the mechanism from this point causes the assembly to roll, firmly wrapping the uniting band material around it. This rolling continues until the next flute 142 arrives at the rolling station, when the assembly enters the flute 142 and is held therein by means of suction applied through holes 146.

A narrow slit 148 is provided in the longitudinal center of the drum 140 into which the knife 150 projects to sever the completed assembly as it passes in flute 142.

The vacuum shoe terminates in a suitable position to cut off the suction through the holes 146 at a position to cause the cigarettes to be delivered on to band 15.

The invention therefore is not to be restricted to the precise details of the structure shown and described.

What is claimed is:

1. In combination in a mouthpiece cigarette making machine, means for supplying uniting material, means for supplying adhesive to one side of said material; cutting means for severing bands of uniting material; a first suction drum for successively securing the leading edge of said bands; means for supplying sextuple lengths of filter plug material, a plug conveying drum having grooves along its periphery for receiving the sextuple lengths of filter plug material; cutters for subdividing said plug material into double lengths; a second suction drum associated with said conveying drum but rotating in an opposite direction, a contrarotating assembly drum having deflector blades extending radially outwardly from the periphery thereof for removing said double lengths from the second suction drum, means for axially feeding cut cigarette rods in spaced relation to said assembly drum; the deflector blades moving the cigarette rods laterally off the axially feeding means; means on said assembly drum for pushing said rods in abutting contact with said double length of filter plug material to form an assembly; said assembly drum being positioned at a distance from said first suction drum so as to permit application of said assemblies to the leading edge of said bands; means positioned at a distance from said first drum about equal to the diameter of a cigarette for rolling said assemblies therebetween for a time sufficient to cause said assemblies to stick to the edges of said uniting material on which they are supported; a cutting drum rotating in the direction opposite from said first drum and having suction means for picking up said assemblies and holding them on said drum while the same are cut into two cigarettes.

2. A mouthpiece cigarette making machine comprising a source of sextuple lengths of filter plug material, means for subdividing said sextuple lengths into double lengths; an assembly drum rotating in one direction and carrying two axially spaced cut lengths of cigarette material held by means of suction on the periphery of the assembly drum; a plug conveying drum rotating in a direction opposite from that of the assembly drum with alternately opening and closing suction holes for transferring said double lengths between the two axially spaced cut lengths of cigarette material on the assembly drum; said assembly drum having radially extending deflecting blades for picking up said double lengths from said conveying drum; and means for forming an assembly of said filter and cigarettes comprising an oppositely rotating suction drum supporting bands of gummed uniting material for affixing the same around said assembly; a fluted drum rotating oppositely to said last mentioned suction drum in close proximity thereto but at substantially the same peripheral velocity so as to cause said assembly to roll therebetween

thereby wrapping said uniting material therearound; a cutter associated with said fluted drum; a collecting belt disposed adjacent said fluted drum; said fluted drum having a vacuum shoe communicating with said flutes and positioned to cut off suction therethrough to cause said assembly to be delivered on the collecting belt after being severed by the cutter.

3. Apparatus for making mouthpiece cigarettes comprising an assembly conveyor carrying assemblies of two cigarettes and a double length mouthpiece therebetween in axial abutment, a uniting band carrying drum carrying uniting bands having an adhesive on the exposed face thereof and including means for holding the uniting bands on the periphery thereof and each uniting band engaging one of the assemblies on the assembly conveyor to secure the assembly to the uniting band and the uniting band carrying drum carrying each assembly and the uniting band secured thereto through a predetermined angle to firmly secure the uniting band to the assembly, a cutting drum disposed adjacent the uniting band carrying drum and engaging each assembly and the uniting band secured thereto carried on the uniting band carrying drum, the uniting band being rolled about and secured to the assembly between the uniting band carrying drum and the cutting drum, and means for severing each assembly through the double length mouthpiece while on the cutting drum to form two finished mouthpiece cigarettes.

4. Apparatus for making mouthpiece cigarettes comprising a drum for carrying assemblies of cigarette lengths and mouthpieces arranged axially in juxtaposition, means for supplying each of said assemblies with a uniting band, an opposed roller rotating in the same direction as said drum for rolling said uniting band about a portion of each assembly on said drum to join the mouthpieces to the cigarette lengths, said roller having a groove for receiving said assemblies after they have had the uniting band rolled thereabout, said roller being spaced relative to said drum such that said assemblies do not pass between the drum and the roller as the uniting band is rolled on said assemblies.

5. Apparatus for making mouthpiece cigarettes comprising a drum for carrying assemblies of cigarette lengths and mouthpieces arranged axially in juxtaposition, means for supplying each of said assemblies with a uniting band, an opposed roller rotating in the same direction as said drum for rolling said uniting band about a portion of each assembly on said drum to join the mouthpieces to the cigarette lengths, said roller having a groove for receiving said assemblies after they have had the uniting band rolled thereabout, and a cutter for cutting said assemblies on said roller to divide said assemblies into individual cigarette lengths, said roller being spaced relative to said drum such that said assemblies do not pass between the drum and the roller as the uniting band is rolled on said assemblies.

6. In a cigarette making machine comprising a suction drum having transverse suction grooves arranged at spaced intervals around the periphery thereof, feeding means underneath said suction drum for continuously and uninterruptedly feeding spaced cigarette rods axially of said suction drum, deflecting blades extending radially outwardly from the periphery of the suction drum for deflecting laterally in pairs the longitudinally moving spaced lengths of cigarette rods fed axially of the suction drum by said feeding means, said suction grooves being positioned along the forward surface of said deflecting blades to decelerate the axial movement of said cut lengths of cigarette rod by means of friction resulting from the suction pressure, means for feeding a filter between each pair of cigarette rod lengths on said suction drum, and an inclined rotatable aligning device positioned at the end of said suction drum for aligning the cut lengths of cigarette rod and filters axially as they rotate around said suction drum.

7. In an apparatus for making filter tip cigarettes com-

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prising an assembly conveying drum for conveying an assembly of two cigarette rods and a double length filter between the cigarette rods, said assembly conveying drum having transverse suction transmitting holes positioned on its periphery for holding assemblies to be united on said holes, means for rotating said assembly conveying drum in a predetermined direction, feeding means underneath said suction drum for continuously and uninterruptedly feeding spaced cigarette rods axially of said assembly conveyor drum, deflector blades extending radially outwardly from said drum adjacent to each of said suction transmitting holes for laterally deflecting the longitudinally moving cigarette rods fed axially of said assembly conveying drum by said feeding means, a uniting band carrying drum for picking up said assemblies from said assembly conveying drum, and rolling means for rolling a uniting band around each assembly.

8. In a cigarette making machine having the features provided for in claim 7 including means for feeding filters to said assembly drum, said suction holes holding said assemblies in place in a V-shaped corner formed on the suction drum characterized by the ability of said corner to hold the assemblies in substantial axial alignment.

9. In a cigarette making machine having the features provided for in claim 8 wherein said suction means and said V-shaped corner frictionally hold an assembly in accurate straight axial alignment, and means are provided to move the two cigarettes and the filter in close end to end formation by sliding them along the V-shaped corners against the frictional force caused by suction and simultaneously moving the close end to end assemblies to the desired radial position.

10. In a mouthpiece cigarette making machine, a rotating assembly drum, means for feeding a double length filter-mouthpiece, means for feeding cigarette lengths axially of said assembly drum, said assembly drum having a plurality of deflecting blades extending transversely along the periphery thereof for picking up a pair of spaced cut lengths of cigarette rod fed axially of the assembly drum and a double length filter mouthpiece in between the pair of spaced cut lengths of cigarette rod, suction holes positioned along the forward surface of said blades, an axial aligning device on the outer periphery of said assembly drum for pushing said cut cigarette lengths into abutting contact with said filter mouthpiece, a uniting band carrying drum rotating in a direction opposite from said assembly drum, a shoe in said assembly drum positioned to cut off suction through said holes at a position to cause an assembly consisting of a pair of cut cigarette lengths and a filter mouthpiece to be delivered on the leading end of a uniting band held on the uniting band carrying drum, said axial aligning device on said assembly drum consisting of a rotatable inclined aligning plate and spring activated pusher pins each having a head riding against the aligning plate, said pins being in axial alignment with a filter mouthpiece lying between two axially spaced cigarette lengths held on said assembly drum by means of said suction holes.

11. Apparatus for applying uniting bands to assemblies of mouthpieces and cut lengths of cigarette rod, comprising a first drum, means for depositing cut lengths of uniting band material on the periphery of said first drum, mechanism for depositing cut lengths of cigarette rod material and mouthpiece material in assembly formation on said first drum so that the components of the assembly which are to be joined together are positioned on top of one end of the uniting band material, a second drum spaced from said first drum at a distance approximating the diameter of a finished mouthpiece cigarette and having suction grooves on the periphery thereof, and a drive mechanism for imparting movement to said first and second drums in the same rotary direction to effect a controlled relative movement between the opposing peripheral surfaces of said first and second drums so as to cause a cigarette mouthpiece assembly passing therebetween to

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be rolled to apply the uniting band thereabout, the peripheral speeds of said drums being substantially equal so that the assembly being rolled between the opposing peripheries of said drums does not progress between said drums until a groove of said second drum comes in contact with said assembly and removes it from its position between said drums after it has had the uniting band applied thereabout.

12. An apparatus for making mouthpiece cigarettes comprising a rotating drum having suction perforations transversely arranged across the periphery of said drum at predetermined intervals, means for delivering assemblies and uniting bands to said drum, means for establishing and cutting off suction for said assemblies and uniting bands thereon, a second drum spaced from said first drum at a distance approximately the diameter of an assembly for causing uniting bands to be applied about the assembly, said drums having the adjacent opposed tangential surfaces thereof travelling in opposite directions to apply a uniting band thereabout by rolling the assembly therebetween, said drums having substantially smooth surfaces, means for receiving said assemblies after they have had the uniting band applied thereabout and means for continuously cleaning the surfaces of said drums while they are in operation.

13. In a cigarette making machine comprising a suction drum having transverse suction holes arranged at spaced intervals around the periphery thereof, means for feeding uniting band material, means for feeding filters to said suction drum, feeding means underneath said drum for continuously and uninterruptedly feeding spaced cigarette rods axially of said suction drum, deflecting blades extending radially outwardly from the periphery of said suction drum for deflecting laterally the longitudinally moving spaced cut lengths of cigarette rods fed axially of the suction drum by said last-mentioned feed means, said deflecting blades carrying an assembly of two cigarettes and a filter therebetween in close end to end formation and positioning said assembly on to the leading end of a uniting band material fed by the means for feeding uniting band material, said suction holes being positioned along the forward surfaces of said deflecting blades so that the cut lengths of cigarette rods are disposed against the respective deflecting blades and over the adjacent suction holes, said suction holes and said deflecting blades defining means to decelerate the axial movement of said cut lengths of cigarette rod by the friction between the rod and the drum as a result of the suction holding the rod against the drum and by the friction between the deflecting blades and the rods as a result of the lateral movement of the deflecting blades relative to the cigarette rods, rolling means for rolling said uniting band material around said assembly, suction means on the periphery of said rolling means for tightly holding said assembly against said band and in close end to end formation for a specific time before said rolling means commences to roll the uniting band material around the assembly such that the leading end of the uniting band material is firmly secured to the close end to end abutting assembly before rolling.

14. A cigarette making machine having the features provided for in claim 13 wherein said rolling means comprise a pair of cylindrical drums between which the assembly is rolled to apply a uniting band thereabout, one of said drums having suction means on the periphery thereof.

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