

United States Patent

Jenkins et al.

[15] 3,645,272

[45] Feb. 29, 1972

[54] AUTOMATIC CIGARETTE-MAKING MACHINE

[72] Inventors: Ray T. Jenkins, Kansas City, Kans.; Roy C. Degenfelder, Independence; Leonard Bieri, Jr., Lee's Summit, both of Mo.; John J. Tetyak, Boca Raton, Fla.

[73] Assignee: Jenkins & Ott, Inc., Kansas City, Kans.

[22] Filed: Oct. 13, 1969

[21] Appl. No.: 865,627

[52] U.S. Cl. 131/21 R, 131/21 C, 131/75
[51] Int. Cl. A24c 5/02, A24c 5/32, A24c 5/42
[58] Field of Search 131/75, 70, 21 C, 21 A, 81 A, 131/44, 21 R

[56] References Cited

UNITED STATES PATENTS

172,661 1/1876 Rubin 131/75
506,412 10/1893 Bilgram 131/81 A X

587,825 8/1897 Hudson 131/44 UX
1,150,824 8/1915 Karlson 131/75
1,929,581 10/1933 Green 131/75
2,554,379 5/1951 Oetinger 131/21 C

Primary Examiner—Samuel Koren

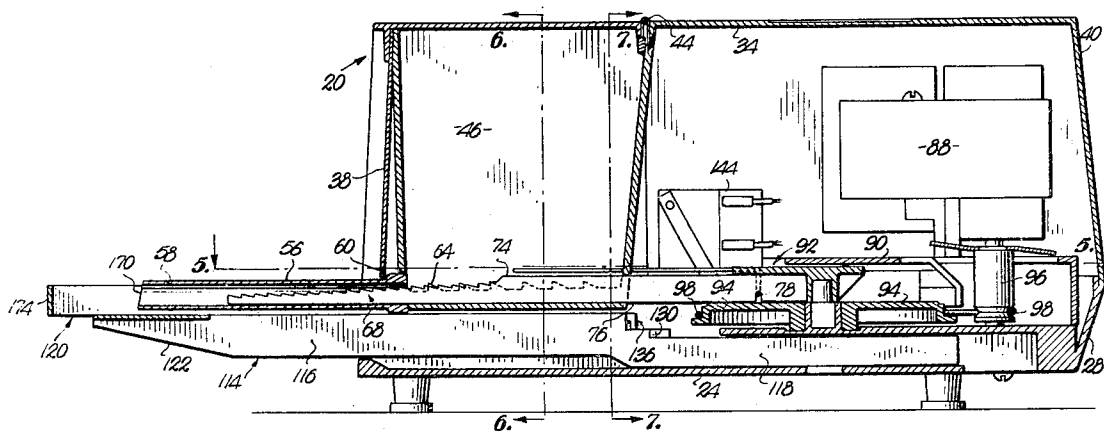
Assistant Examiner—J. F. Pitrelli

Attorney—Schmidt, Johnson, Hovey, Williams & Chase

[57] ABSTRACT

An automatic cigarette-making machine for home, office, or club use, the machine having a receptacle for receiving loose tobacco from which the cigarette is to be made, there being means carried by the machine for positioning a hollow cigarette tube with respect to the receptacle and in communication therewith; and feeder means for delivering the tobacco from the receptacle into the cigarette tube whereby to make up the finished cigarette, there being a motor coupled with the feeder means whereby the forming of individual cigarettes may be automatically accomplished upon actuation of the machine.

17 Claims, 11 Drawing Figures



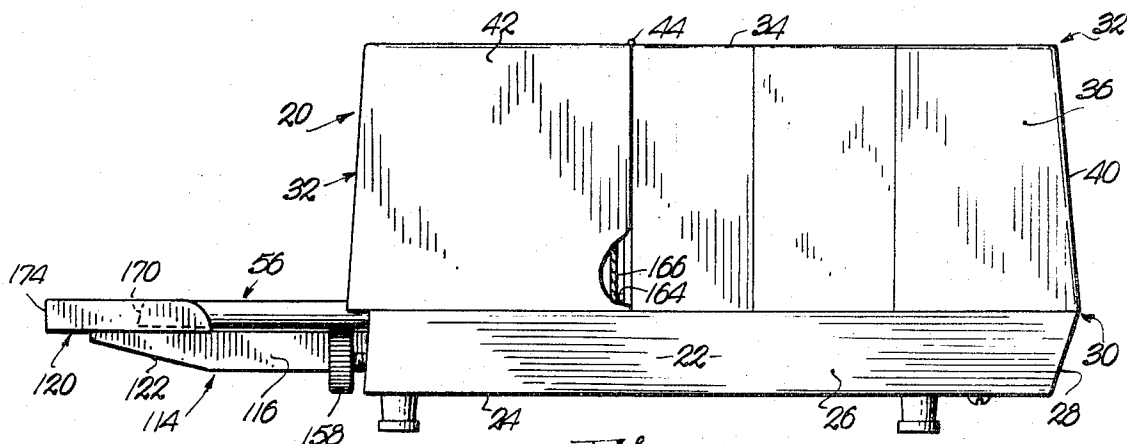


Fig. 1.

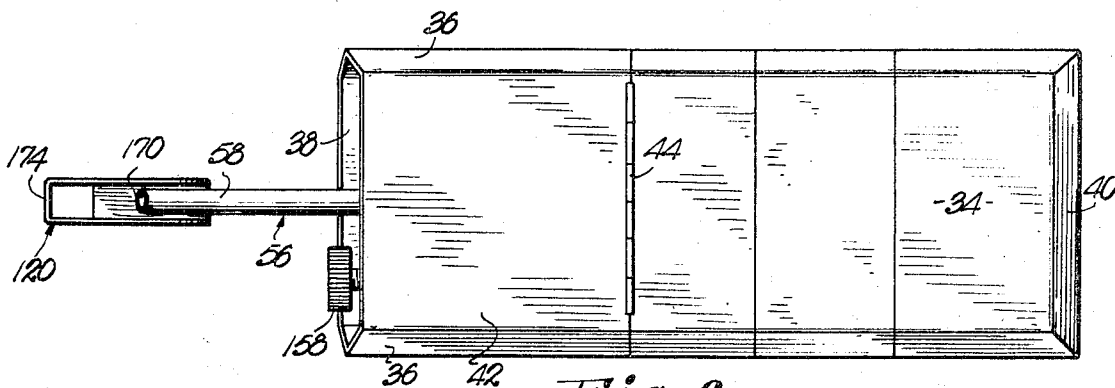


Fig. 2.

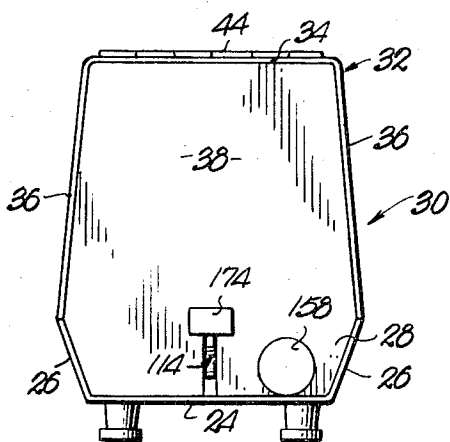


Fig. 3.

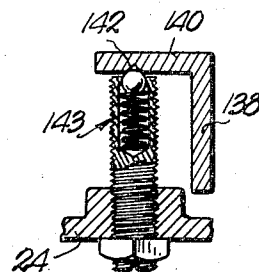


Fig. 11.

Ray T. Jenkins
John J. Tetyak
Roy C. Degenfelter
Leonard Bieri, Jr.
INVENTORS.

BY *Schmidt, Johnson, Long,*
Williams & Chase
ATTORNEYS.

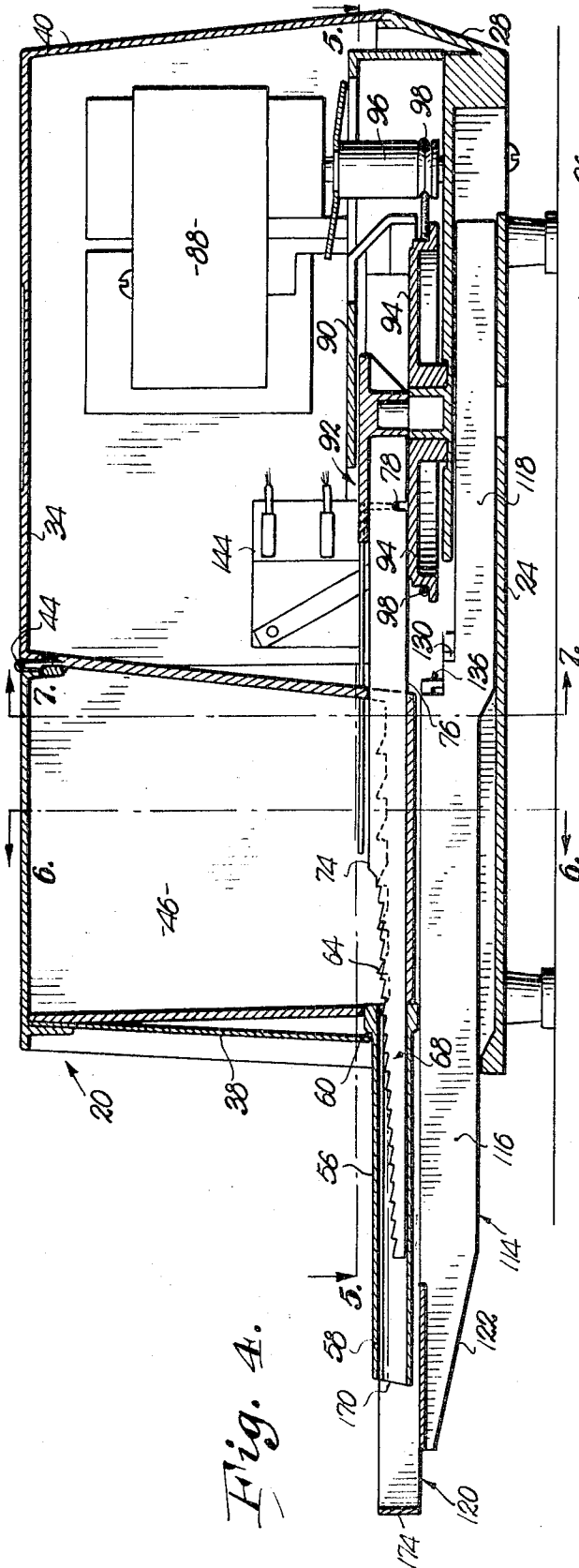


Fig. 4.

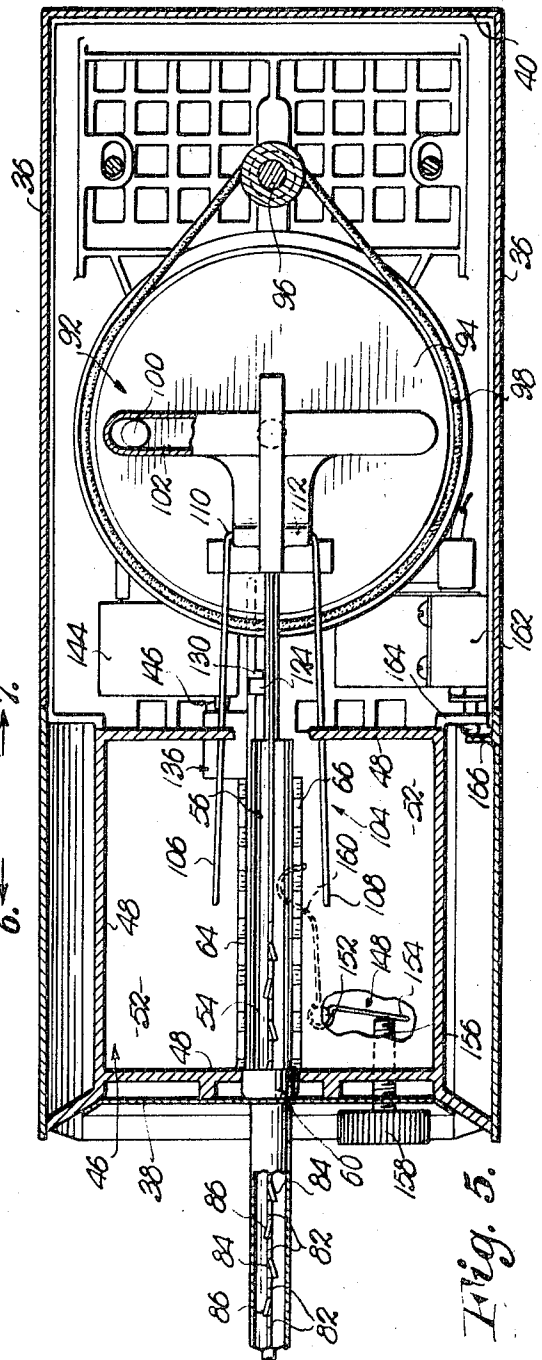


Fig. 5.

Ray T. Jenkins
John J. Tetyak
Roy C. Degenfelter
Leonard Bierl, Jr.
INVENTORS.

BY Schmidt Johnson, Story,
Williams & Chase
ATTORNEYS.

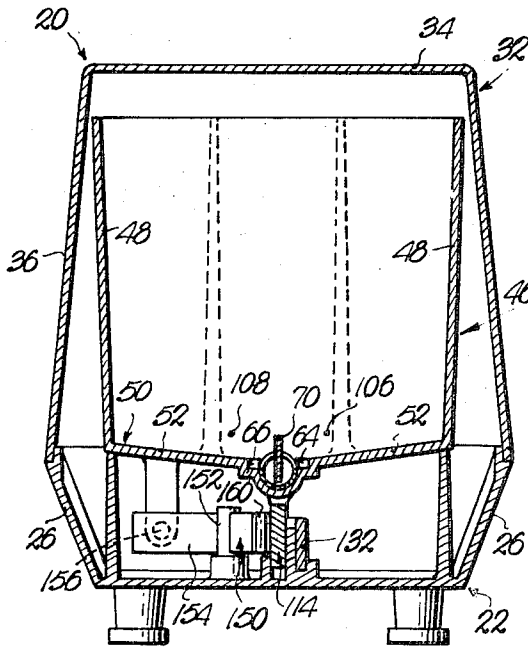


Fig. 6.

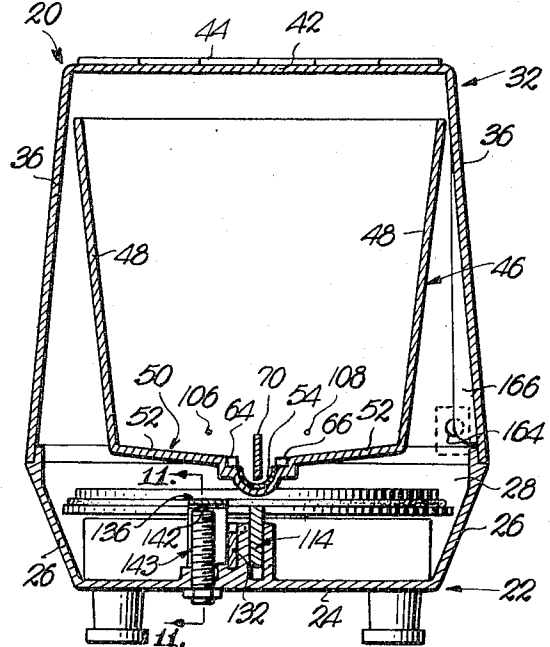


Fig. 7.

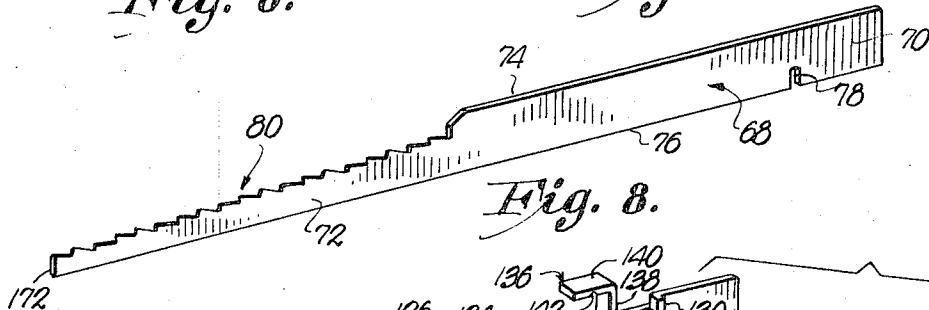


Fig. 8.

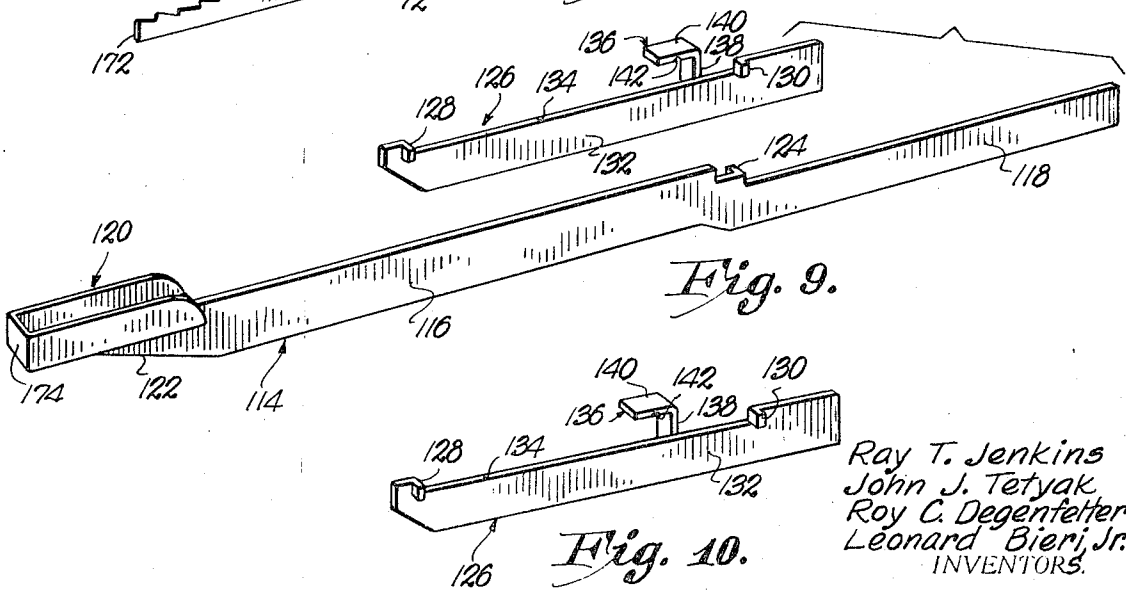


Fig. 9.

Fig. 10.

Ray T. Jenkins
John J. Tetyak
Roy C. Degenteller
Leonard Bier, Jr.
INVENTORS.

BY Schmidt, Johnson, Hovey,
Williams & Chase
ATTORNEYS.

AUTOMATIC CIGARETTE-MAKING MACHINE

It is the most important object of this invention to provide an automatic cigarette making machine primarily intended for home or office use by individuals whereby cigarettes of the desired length, type and firmness may be individually automatically formed by actuation of the motor-driven machine.

In order to accomplish the foregoing objective there is provided a machine having a receptacle for receiving the loose tobacco from which the cigarette is to be made, there being a feeder pipe extending from the receptacle and in communication therewith, the outer end of the feeder pipe being cylindrical or oval in cross section and of a diameter smaller than the inner diameter of the cigarette tube, the inner end of the feeder pipe being bell-shaped and communicating with a trough formed in the receptacle, there being feeder means in the form of an elongated, longitudinally reciprocable member with a portion thereof disposed within the trough, the member having a plurality of teeth thereon whereby, upon actuation of the machine, the member is reciprocated to thereby deliver the tobacco from the receptacle into a cigarette tube which has been positioned upon the outer end of the feeder pipe, the machine continuing to operate until a cigarette of the desired length and firmness has been made, the machine then being automatically deactuated.

It is another important object of this invention to provide, in a machine of the type hereinabove described, means for reliably delivering the tobacco from which the cigarette is to be made, which tobacco is normally in the form of strands, from the receptacle into the hollow cigarette tube, this being accomplished by the provision of a plurality of teeth on the normally uppermost edge of the feeder member, certain of said teeth lying in a substantially vertical plane, the other of said teeth being angularly offset with respect to the vertical plane of said certain teeth; there also being a plurality of serrations formed in the bottom of the receptacle on each side of the feeder member whereby to insure a continuous feed of the tobacco from the receptacle into the hollow cigarette tube and to prevent the tobacco from being drawn inwardly with respect to the receptacle as the feeder member is reciprocated.

Another important object is to provide a slidable carrier for the hollow cigarette tube, the carrier having a cradle at one end thereof for receiving one end of the cigarette tube whereby to position the other end of the tube in communication with the receptacle as by sliding the same over the outer end of the feeder pipe.

Yet another important aim of this invention is to provide an automatic cigarette making machine wherein the length of the finished cigarette may be selectively determined and the machine automatically actuated and deactuated, all by means of an actuator bar which is positioned proximal to the slidable carrier in generally parallel relationship thereto, the actuator bar having a pair of spaced, laterally extending lugs, the carrier having a lateral extension, the extension being selectively engageable with the lugs whereby to reciprocate the actuator bar between positions actuating and deactuating the machine. The actuator bar is also provided with a stop thereon, which stop engages a motor switch whereby to actuate the machine, the stop being shiftable out of engagement with the switch whereby to deactuate the machine when a cigarette of the desired length has been made by the machine.

Yet another object is to provide means for controlling the firmness of the cigarette made by the machine, such means including a resilient member shiftable into and out of engagement with the slidable carrier whereby to control the rate of movement thereof and, therefore, the density of the tobacco as it is delivered into the cigarette tube.

Another significant object is the provision of an agitator assembly which is coupled with the motor of the machine and has a pair of legs extending into the receptacle whereby to agitate the tobacco therein and present the bridging thereof over the trough, all to the end that a continuous flow of tobacco into the trough for delivery into the cigarette tube is provided.

Other objects include details of construction which will become apparent from the following specification and accompanying drawings, wherein:

FIG. 1 is a side elevational view of the automatic cigarette making machine;

FIG. 2 is a top plan view thereof;

FIG. 3 is an end elevational view thereof taken from the left end of FIG. 2;

FIG. 4 is a substantially central, vertical sectional view;

FIG. 5 is a horizontal sectional view taken along line 5—5 of FIG. 4;

FIG. 6 is a sectional view taken along line 6—6 of FIG. 4;

FIG. 7 is a sectional view taken along line 7—7 of FIG. 4;

FIG. 8 is a perspective view of the feeder member;

FIG. 9 is an exploded perspective view of the slidable carrier and actuator bar;

FIG. 10 is a perspective view of the actuator bar showing the stop in a different position from that shown in FIG. 9; and

FIG. 11 is an enlarged, sectional view taken along line 11—11 of FIG. 7.

The automatic cigarette making machine is broadly designated by the numeral 20 and includes a base 22 of generally rectangular plan configuration, the base having a bottom wall 24, a pair of upwardly and outwardly inclined sidewalls 26, and a pair of end walls 28. The base 22 forms the lower portion of a housing 30 which encloses the operating components of the machine 20, the housing 30 having an upper cover portion 32, said cover portion 32 having a top wall 34, a pair of downwardly extending, outwardly inclined sidewalls 36, which sidewalls meet and mate with the upper edges of the base sidewalls 26 as is clearly shown in FIGS. 6 and 7, and a pair of opposed end walls in the nature of a front wall 38 and a rear wall 40. A lid 42 is formed as a part of cover portion 32 and is hingedly connected thereto as by a hinge 44 whereby the lid 42, which includes a portion of top wall 34 and a portion of sidewalls 36, may be swung about hinge 44 from an open to a closed position whereby to provide access to the receptacle 46 which receives the loose tobacco from which the cigarette is to be made.

Receptacle 46 is in the nature of a hopper, the same having four sidewalls 48 and a bottom 50, the bottom 50 being constituted by two inclined portions 52 which are inclined inwardly and downwardly from their adjacent sidewalls 48 toward a trough 54 which is formed centrally of the bottom wall 50 of receptacle 46. The lid 42, when it is closed, provides the top wall for receptacle 46.

The trough 54 is in communication with a feeder pipe 56, said feeder pipe 56 having an outer portion 58 extending outwardly from the front wall 38 of the housing 30 and an inner portion 60, which inner portion is bell-shaped and is connected to the receptacle 46, as by swedging. The outer end 58 of feeder pipe 56 is cylindrical or oval in configuration and has an outer diameter slightly smaller than that of a preformed hollow cigarette tube which is utilized in conjunction with the machine and forming the finished cigarette. By virtue of the reduced diameter of outer portion 58, one end of a cigarette tube may be slipped over said outer portion in a manner hereinafter more fully described in order to commence the fabrication of a finished cigarette.

Incorporated in the bottom 50 of the receptacle 46 are a pair of lines of serrations 64 and 66, each of said lines lying adjacent the trough 54 in a manner best shown in FIGS. 5 and 7 of the drawings. Said serrations extend substantially across the bottom 50 of the receptacle 46 and each of the lines of serrations lies in a vertical plane, the apex ends of the serrations extending upwardly.

The machine 20 is provided with feeder means for delivering the loose tobacco which is received by the receptacle 46, through the feeder pipe 56 and into the hollow cigarette tube, which tube is not shown in the drawings but which is, as hereinabove explained, positioned with one end thereof over the outer end of feeder pipe 56, the feeder means being more specifically in the form of an elongated, longitudinal reciprocable feeder member 68. Viewing FIG. 8, it is seen that

the feeder member has a shank portion 70 and a blade portion 72, the member having a normally uppermost edge 74 and a normally lowermost edge 76, the blade portion 72 having a plurality of teeth on the upper edge 74 thereof, the shank portion 70 having a notch 78 formed in the normally lower edge 76 thereof.

The teeth 80 extend throughout the length of the blade portion 72 of feeder member 68 and are of a particular disposition whereby to insure the maximum feed of loose tobacco from the receptacle 46 into the cigarette tube. Specifically, every other one of said teeth 80, as for instance those teeth designated as 82, is disposed in a vertical plane and therefore, lies in the same vertical plane as the major part of blade portion 72. Every other tooth is offset angularly with respect to said vertical plane, alternate offset teeth being disposed to the left of said vertical plane viewing FIG. 5, and the other alternate vertical teeth being angularly inclined to the right with respect to said vertical plane. Said teeth inclined to the left are designated as 84 in FIG. 5, and the teeth angularly inclined to the right are designated as 86 in said Figure.

The shank portion 70 of feeder member 68 is operably coupled with a motor 88 which is disposed within the housing 30 and carried by a suitable support structure 90, such coupling being through the medium of a scotch yoke assembly 92, which assembly includes a pulley wheel 94 coupled with the drive shaft 96 of the motor 88 by a belt 98, said assembly 92 also including an eccentric pin 100 disposed within a slot 102 whereby to convert the rotary motion of drive shaft 96 of motor 88 into a reciprocating motion, this motion being in turn, transmitted to the feeder member 68 inasmuch as the same is coupled with the pulley 94 through the notch 78.

Specifically, such coupling is accomplished by a portion of a reciprocable agitator assembly 104, said agitator assembly being in the general form of a U-shaped wire having a pair of legs 106 and 108 and a bight portion 110, which bight portion extends through a boss 112 formed as a part of the yoke assembly 92, the bight portion 110 also seating within the notch 78 whereby to couple the feeder member 68 to the pulley 94. By virtue of this coupling and once the motor 88 is actuated, a rectilinear reciprocating motion will be imparted to the feeder member 68 and also to the legs 106 and 108 of the agitator assembly 104. Thus, when motor 88 is actuated, the feeder member 68 is reciprocated, the teeth 80 thereof gathering the loose tobacco within the receptacle 46 and delivering the same from said receptacle through the feeder pipe 56 and into the open end of a hollow cigarette tube which has been previously positioned over the outer end 58 of said feeder pipe. The agitator assembly 104, which has its legs 106 and 108 extending into the receptacle 46 with one of said legs on each side of the trough 54 and spaced upwardly and outwardly therefrom, causes agitation of the loose tobacco within the receptacle 46 to prevent the same from bridging over the trough, such agitation insuring a continuous flow of loose tobacco into the trough 54 for subsequent delivery by feeder member 68.

The machine 20 also includes a slidable carrier 114 which is reciprocable with respect to the machine 20, the carrier 114 having a first stretch 116 and a second, laterally offset stretch 118, there being a cradle 120 at the normally outermost end 122 of stretch 116 for receiving one end of the cigarette tube, the other end of the tube being telescoped over the feeder pipe 56 as hereinabove explained. Intermediate said stretches 116 and 118, the slidable carrier 114 is provided with a lateral extension 124.

An actuator bar 126 is positioned proximal to the slidable carrier 114 and in generally parallel relationship with respect thereto, as best seen for instance, in FIGS. 6 and 7 of the drawings, said actuator bar 126 and said slidable carrier 114 both being slidably carried by suitable channels defined by upwardly extending projections on the bottom 24 of the base 22.

Actuator bar 126 has a pair of spaced, laterally extending lugs 128 and 130 thereon, said lugs each extending in the same lateral direction with respect to the main body 132 of bar 126 and defining therebetween a track 134 which is presented by

the upper flat edge of body 132. Bar 126 carries, on the side thereof opposite to lugs 128 and 130, a generally L-shaped stop 136, said stop having normally vertically disposed base leg 138 and a generally horizontally disposed top leg 140, there being a groove 142 in the normally lowermost face of leg 140 for purposes hereinafter explained.

When the actuator bar and the slidable carrier, shown in exploded perspective in FIG. 9, are positioned for operation within the machine 20, the extension 124 rides along track 134 of bar 126, it being apparent that as carrier 114 is reciprocated with respect to bar 126, the extension 124 will traverse a path between lug 130 and lug 128. Such movement accomplishes the actuation and deactuation of the machine by virtue of the fact that there is provided a switch 144 within the housing 30 for the motor 88, said switch 144 having a push-button 146 which is disposed within the path of movement of the stop 136. Thus, viewing FIG. 5 for instance, it will be seen that as the carrier 114 is moved to the right, the extension 124 will strike lug 130 thereby causing shifting movement of the actuator bar 126 to the right, this resulting in the stop 136 depressing button 146 to thereby actuate motor 88 and thereby the machine 20. As the cigarette is being formed, the above-mentioned one end thereof which is received within the cradle 120, causes the carrier 114 to move to the left viewing FIG. 5, thereby moving extension 124 out of engagement with lug 130 and along the trackway 134. When the cigarette has been finished, the extension 124 then engages lug 128, thereby causing shifting of bar 126 to the left and disengagement of button 146 by stop 136, thereby deactuating the machine.

It will be appreciated that the length of the cigarette to be made by the machine 20 may be preselected by virtue of the position of the stop 136 on the bar 126, a second form of the bar being shown for instance, in FIG. 10 of the drawings wherein the stop 136 is positioned more toward the middle of the trackway 134, this permitting the formation of a shorter cigarette inasmuch as the carrier and the bar must be moved further to the right in order to actuate the machine, this decreasing the distance between the cradle 120 and the outer end 58 of the feeder pipe 56. It will be readily recognized that the stop 136 may be located at any position along the actuator bar 126 and in order to permit fabrication of cigarettes of varying lengths, the machine may be either provided with a number of actuator bars when it is offered for sale, or the actuator bar may be made in such a manner that the stop 136 is shiftable from one position to another therealong.

To insure that stop 136 is retained in engagement with button 146 during the fabrication of the cigarette, the groove 142 on top leg 140 is engaged by a detent assembly 143 as illustrated in FIG. 11, said detent assembly retaining the stop against movement as the extension 124 rides along track 134, but permitting the stop 136 to be shifted out of engagement with button 146 once extension 124 engages lug 128, such engagement being with sufficient force to overcome the action of the detent assembly 143 and thereby shift actuator bar 126 to the left viewing FIG. 5, thereby deactuating the machine.

In order to control the firmness of the finished cigarette to be made by the machine 20, which firmness is a result of the density of the tobacco packed within the tube, there is provided a firmness control apparatus broadly designated by the numeral 148, said apparatus including a resilient member 150 which is shiftable into and out of engagement with the carrier 114. Viewing FIG. 5 for instance, it is noted that the resilient member 150 is pivoted as by a pin 152 disposed intermediate its ends, one end 154 being engageable with the stem 156 of an exteriorly located operating knob 158, the other end of the resilient member 160 having a hook portion having the bight thereof bearing against carrier 114. Thus, by bringing the end 160 of member 150 into tighter frictional engagement with the carrier 114, the rate of movement thereof is decreased for instance, thereby increasing the density with which the tobacco is packed into the cigarette tube. Manifestly, decreasing the frictional engagement of the apparatus 148 with the carrier

114 will permit increased speed of movement of the carrier and thereby result in a lower density of tobacco within the finished cigarette and thus a less firm cigarette.

The machine 20 is provided with a safety switch 162 for the motor 88, said switch initially closing a circuit to ready the machine 20 for actuation. The switch 162 is operated by a reciprocable button 164 which is engaged by a portion of the lid 42 more specifically and inwardly extending flange 166 so that it is impossible to operate the machine 20 when the lid 42 is open. However, when the lid is swung about hinge 44 to a closed condition, the flange 166 engages button 164, thereby closing a circuit to the motor 88 and readying the machine for operation once stop 136 has been shifted into engagement with the button 146 which operates the direct motor actuating switch 144.

In order to operate the machine 20 hereinabove described to automatically make a cigarette, a suitable cigarette tube which may be in the form of an elongated, hollow tubular paper member open at both ends or such a member which is provided with a filter at one end thereof, is positioned with the open end telescoped over the outer end 58 of feeder pipe 56. Such telescoping, together with the lightweight of the cigarette tube, will tend to retain the same in position, although it is desirable that the other end of the cigarette be received within the cradle 120.

Assuming that the loose tobacco has been previously placed within the receptacle 46, and the lid 42 of the receptacle closed whereby to close switch 162, the slidable carrier is reciprocated in a right-hand direction viewing FIGS. 4 and 5 for instance, such reciprocation serving to further telescope the cigarette tube over the outer end 58 of feeder pipe 56 to a point where the opening 170 of the outer end 58 is adjacent the left-hand end of the area of the cigarette tube to be filled, viewing FIGS. 4 and 5.

As the slidable carrier 114 is so reciprocated, the extension 124 thereof will ride along trackway 134 until it engages lug 130, thereby causing shifting movement of actuator bar 126 in a right-hand direction to a point where the base leg 138 of stop 136 engages and depresses button 146 thereby closing switch 144 and actuating the motor 88.

As the motor 88 continues to run, the normally rotary motion of its drive shaft 96 is converted, by scotch yoke 92 into a reciprocating motion, which motion is transmitted to the feeder member 68 and also to the legs 106 and 108 of agitator assembly 104. Thus, the tobacco within the receptacle 46 is constantly agitated and permitted to flow downwardly into the trough 54 whereupon it is engaged by the teeth 80 of blade portion 72 of feeder member 68 and carried, by said teeth, along the feed pipe 56 through the outer end 58 thereof and into the cigarette tube telescoped thereover.

It will be appreciated that the angular disposition of certain of the teeth 84 and 86 of the feeder member 68 aids in engaging the strands of tobacco and tends to align the same in a longitudinal direction generally parallel with feeder member 68 and its rectilinear path of movement. Thus, the strands of tobacco, as they are delivered into the cigarette tube, tend to be aligned longitudinally thereof and packed thereinto under the action of the teeth 80, the packing being accomplished by the front edges of said teeth as well as the tip end 172 of the feeder bar 68.

In order to prevent the tobacco within the receptacle from being drawn to the right, viewing FIGS. 4 and 5, as the feeder member 68 reciprocates, the serrations 64 and 66 have the front edges thereof facing in the same direction as the front edges of the teeth 80 and thereby serve to effectively stop the backflow of tobacco which might otherwise occur as feeder member 68 moves on its return stroke to the right.

As hereinabove explained, the rate of movement of carrier 114 can be controlled through firmness control apparatus 148, it being noted that the knob 158 therefor is located exteriorly of the machine whereby to permit ready access thereto and therefore, easy variance of the firmness of the cigarette being made by the machine.

As the feeder member 68 reciprocates, the slidable carrier 114 is urged to the left inasmuch as the other end of the cigarette is in engagement with an end wall 174 of the cradle 120. Such movement in a rectilinear path of the carrier 114 causes extension 124 to move along trackway 134 until it reaches lug 128. Upon reaching and engaging said lug 128, the entire actuator bar 126 is shifted to the left, such shifting movement overcoming the detent engagement of assembly 143 with groove 142 whereby to shift stop 136 out of engagement with button 146 and thereby deactuate the machine, such deactuation occurring only after a cigarette of the desired length has been fully fabricated. As hereinabove explained, the position of the stop 136 upon the actuator bar 126 may be changed whereby to vary the length of the cigarette to be fabricated by the machine, the operation of the machine being the same regardless of the position of the stop 136.

It will be appreciated from the foregoing that there is presented a machine which is relatively simple in operation and construction and which may be used by cigarette smokers to fabricate their own cigarettes from loose tobacco, the tobacco and the preformed cigarette tubes being available on the open market so that the user of the machine may select the particular tobacco of his choice, the type of cigarette to be formed therefrom, the length of such cigarette, and the firmness of pack of the tobacco in the cigarette.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. An automatic cigarette making machine comprising:

a receptacle for receiving the loose tobacco from which the cigarette is to be made;

means for positioning a hollow cigarette tube with respect to the receptacle with the tube in communication with the receptacle, said positioning means including a slidable carrier reciprocable with respect to said receptacle, said carrier having a cradle for receiving one end of the cigarette tube, the other end of the tube being in communication with the receptacle and a feeder pipe extending from said receptacle and having its inner end in communication therewith, the outer end of the feeder pipe being receivable within said other end of the cigarette tube, the outer end of said feeder pipe being cylindrical and of an outer diameter smaller than the inner diameter of the cigarette tube;

feeder means for delivering the tobacco from the receptacle into the cigarette tube, said feeder means being in the form of an elongated, longitudinally reciprocable member passing through said receptacle and into the cigarette tube; and

a trough defined by said receptacle, said trough extending across the bottom of the receptacle, there being a line of serrations formed in the bottom of said receptacle on each side of the trough.

2. An automatic cigarette making machine as set forth in claim 1, the bottom of said receptacle being inclined toward said trough.

3. An automatic cigarette making machine as set forth in claim 1, said feeder member having a portion thereof disposed within said trough.

4. A cigarette making machine as set forth in claim 3, said feeder member having a plurality of teeth thereon, the teeth on said feeder member and the serrations in the bottom of the receptacle extending in a direction away from said bottom.

5. A cigarette making machine as set forth in claim 4, said serrations on each side of the trough lying in a substantially vertical plane, certain of said teeth on the feeder member lying in a substantially vertical plane, the other of said teeth on the feeder member being angularly offset with respect to the vertical plane of said certain teeth.

6. An automatic cigarette making machine comprising:

a receptacle for receiving the loose tobacco from which the cigarette is to be made;

means for positioning a hollow cigarette tube with respect to the receptacle with the tube in communication with the receptacle;

the feeder member has a shank portion 70 and a blade portion 72, the member having a normally uppermost edge 74 and a normally lowermost edge 76, the blade portion 72 having a plurality of teeth on the upper edge 74 thereof, the shank portion 70 having a notch 78 formed in the normally lower edge 76 thereof.

The teeth 80 extend throughout the length of the blade portion 72 of feeder member 68 and are of a particular disposition whereby to insure the maximum feed of loose tobacco from the receptacle 46 into the cigarette tube. Specifically, every other one of said teeth 80, as for instance those teeth designated as 82, is disposed in a vertical plane and therefore, lies in the same vertical plane as the major part of blade portion 72. Every other tooth is offset angularly with respect to said vertical plane, alternate offset teeth being disposed to the left of said vertical plane viewing FIG. 5, and the other alternate vertical teeth being angularly inclined to the right with respect to said vertical plane. Said teeth inclined to the left are designated as 84 in FIG. 5, and the teeth angularly inclined to the right are designated as 86 in said Figure.

The shank portion 70 of feeder member 68 is operably coupled with a motor 88 which is disposed within the housing 30 and carried by a suitable support structure 90, such coupling being through the medium of a scotch yoke assembly 92, which assembly includes a pulley wheel 94 coupled with the drive shaft 96 of the motor 88 by a belt 98, said assembly 92 also including an eccentric pin 100 disposed within a slot 102 whereby to convert the rotary motion of drive shaft 96 of motor 88 into a reciprocating motion, this motion being in turn, transmitted to the feeder member 68 inasmuch as the same is coupled with the pulley 94 through the notch 78.

Specifically, such coupling is accomplished by a portion of a reciprocable agitator assembly 104, said agitator assembly being in the general form of a U-shaped wire having a pair of legs 106 and 108 and a bight portion 110, which bight portion extends through a boss 112 formed as a part of the yoke assembly 92, the bight portion 110 also seating within the notch 78 whereby to couple the feeder member 68 to the pulley 94. By virtue of this coupling and once the motor 88 is actuated, a rectilinear reciprocating motion will be imparted to the feeder member 68 and also to the legs 106 and 108 of the agitator assembly 104. Thus, when motor 88 is actuated, the feeder member 68 is reciprocated, the teeth 80 thereof gathering the loose tobacco within the receptacle 46 and delivering the same from said receptacle through the feeder pipe 56 and into the open end of a hollow cigarette tube which has been previously positioned over the outer end 58 of said feeder pipe. The agitator assembly 104, which has its legs 106 and 108 extending into the receptacle 46 with one of said legs on each side of the trough 54 and spaced upwardly and outwardly therefrom, causes agitation of the loose tobacco within the receptacle 46 to prevent the same from bridging over the trough, such agitation insuring a continuous flow of loose tobacco into the trough 54 for subsequent delivery by feeder member 68.

The machine 20 also includes a slidable carrier 114 which is reciprocable with respect to the machine 20, the carrier 114 having a first stretch 116 and a second, laterally offset stretch 118, there being a cradle 120 at the normally outermost end 122 of stretch 116 for receiving one end of the cigarette tube, the other end of the tube being telescoped over the feeder pipe 56 as hereinabove explained. Intermediate said stretches 116 and 118, the slidable carrier 114 is provided with a lateral extension 124.

An actuator bar 126 is positioned proximal to the slidable carrier 114 and in generally parallel relationship with respect thereto, as best seen for instance, in FIGS. 6 and 7 of the drawings, said actuator bar 126 and said slidable carrier 114 both being slidably carried by suitable channels defined by upwardly extending projections on the bottom 24 of the base 22.

Actuator bar 126 has a pair of spaced, laterally extending lugs 128 and 130 thereon, said lugs each extending in the same lateral direction with respect to the main body 132 of bar 126 and defining therebetween a track 134 which is presented by

the upper flat edge of body 132. Bar 126 carries, on the side thereof opposite to lugs 128 and 130, a generally L-shaped stop 136, said stop having normally vertically disposed base leg 138 and a generally horizontally disposed top leg 140, there being a groove 142 in the normally lowermost face of leg 140 for purposes hereinafter explained.

When the actuator bar and the slidable carrier, shown in exploded perspective in FIG. 9, are positioned for operation within the machine 20, the extension 124 rides along track 134 of bar 126, it being apparent that as carrier 114 is reciprocated with respect to bar 126, the extension 124 will traverse a path between lug 130 and lug 128. Such movement accomplishes the actuation and deactuation of the machine by virtue of the fact that there is provided a switch 144 within the housing 30 for the motor 88, said switch 144 having a push-button 146 which is disposed within the path of movement of the stop 136. Thus, viewing FIG. 5 for instance, it will be seen that as the carrier 114 is moved to the right, the extension 124 will strike lug 130 thereby causing shifting movement of the actuator bar 126 to the right, this resulting in the stop 136 depressing button 146 to thereby actuate motor 88 and thereby the machine 20. As the cigarette is being formed, the above-mentioned one end thereof which is received within the cradle 120, causes the carrier 114 to move to the left viewing FIG. 5, thereby moving extension 124 out of engagement with lug 130 and along the trackway 134. When the cigarette has been finished, the extension 124 then engages lug 128, thereby causing shifting of bar 126 to the left and disengagement of button 146 by stop 136, thereby deactuating the machine.

It will be appreciated that the length of the cigarette to be made by the machine 20 may be preselected by virtue of the position of the stop 136 on the bar 126, a second form of the bar being shown for instance, in FIG. 10 of the drawings wherein the stop 136 is positioned more toward the middle of the trackway 134, this permitting the formation of a shorter cigarette inasmuch as the carrier and the bar must be moved further to the right in order to actuate the machine, this decreasing the distance between the cradle 120 and the outer end 58 of the feeder pipe 56. It will be readily recognized that the stop 136 may be located at any position along the actuator bar 126 and in order to permit fabrication of cigarettes of varying lengths, the machine may be either provided with a number of actuator bars when it is offered for sale, or the actuator bar may be made in such a manner that the stop 136 is shiftable from one position to another therealong.

To insure that stop 136 is retained in engagement with button 146 during the fabrication of the cigarette, the groove 142 on top leg 140 is engaged by a detent assembly 143 as illustrated in FIG. 11, said detent assembly retaining the stop against movement as the extension 124 rides along track 134, but permitting the stop 136 to be shifted out of engagement with button 146 once extension 124 engages lug 128, such engagement being with sufficient force to overcome the action of the detent assembly 143 and thereby shift actuator bar 126 to the left viewing FIG. 5, thereby deactuating the machine.

In order to control the firmness of the finished cigarette to be made by the machine 20, which firmness is a result of the density of the tobacco packed within the tube, there is provided a firmness control apparatus broadly designated by the numeral 148, said apparatus including a resilient member 150 which is shiftable into and out of engagement with the carrier 114. Viewing FIG. 5 for instance, it is noted that the resilient member 150 is pivoted as by a pin 152 disposed intermediate its ends, one end 154 being engageable with the stem 156 of an exteriorly located operating knob 158, the other end of the resilient member 160 having a hook portion having the bight thereof bearing against carrier 114. Thus, by bringing the end 160 of member 150 into tighter frictional engagement with the carrier 114, the rate of movement thereof is decreased for instance, thereby increasing the density with which the tobacco is packed into the cigarette tube. Manifestly, decreasing the frictional engagement of the apparatus 148 with the carrier

9

the receptacle in order to permit commencement of making of the cigarette, a stretch of the carrier completely underlying the cigarette tube as the cigarette is being made, there being a cradle carried by said stretch for receiving said one end of the cigarette tube; and reciprocable feeder means for delivering tobacco from the

5

10

receptacle through said feeder pipe into the cigarette tube, reciprocation of said feeder means causing corresponding movement of the carrier by virtue of the engagement of the one end of the cigarette tube therewith.

* * * * *

10

15

20

25

30

35

40

45

50

55

60

65

70

75