

(No Model.)

4 Sheets—Sheet 1.

G. F. CARLIE.
CIGARETTE MACHINE.

No. 568,661.

Patented Sept. 29, 1896.

Fig. 5.

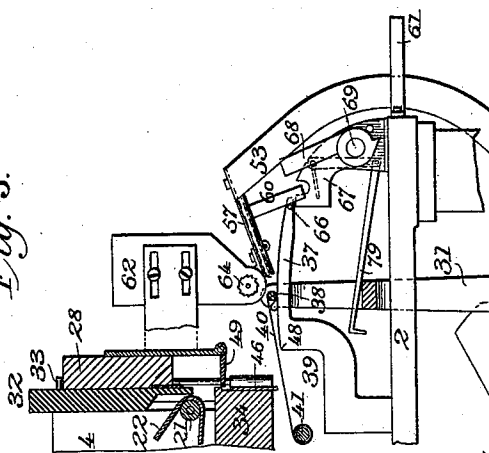


Fig. 6.

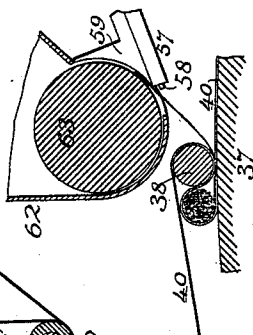
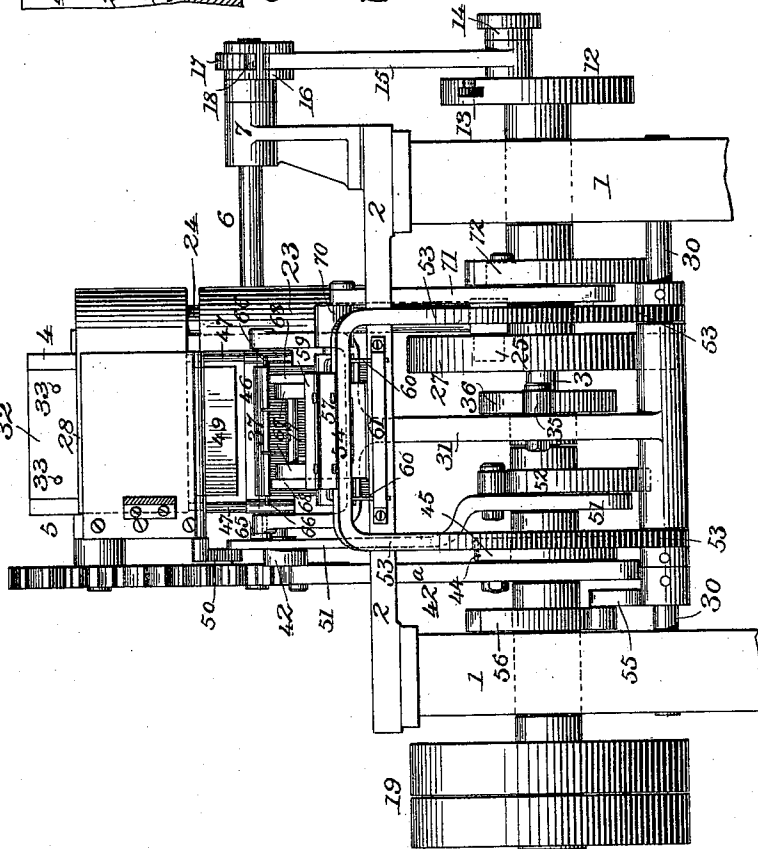


Fig. 1.



Witnesses

Samuel H. Hingsworth
Arthur Garner

Inventor
George F. Carlie
by *W. W. I. Howard*
Attorneys.

(No Model.)

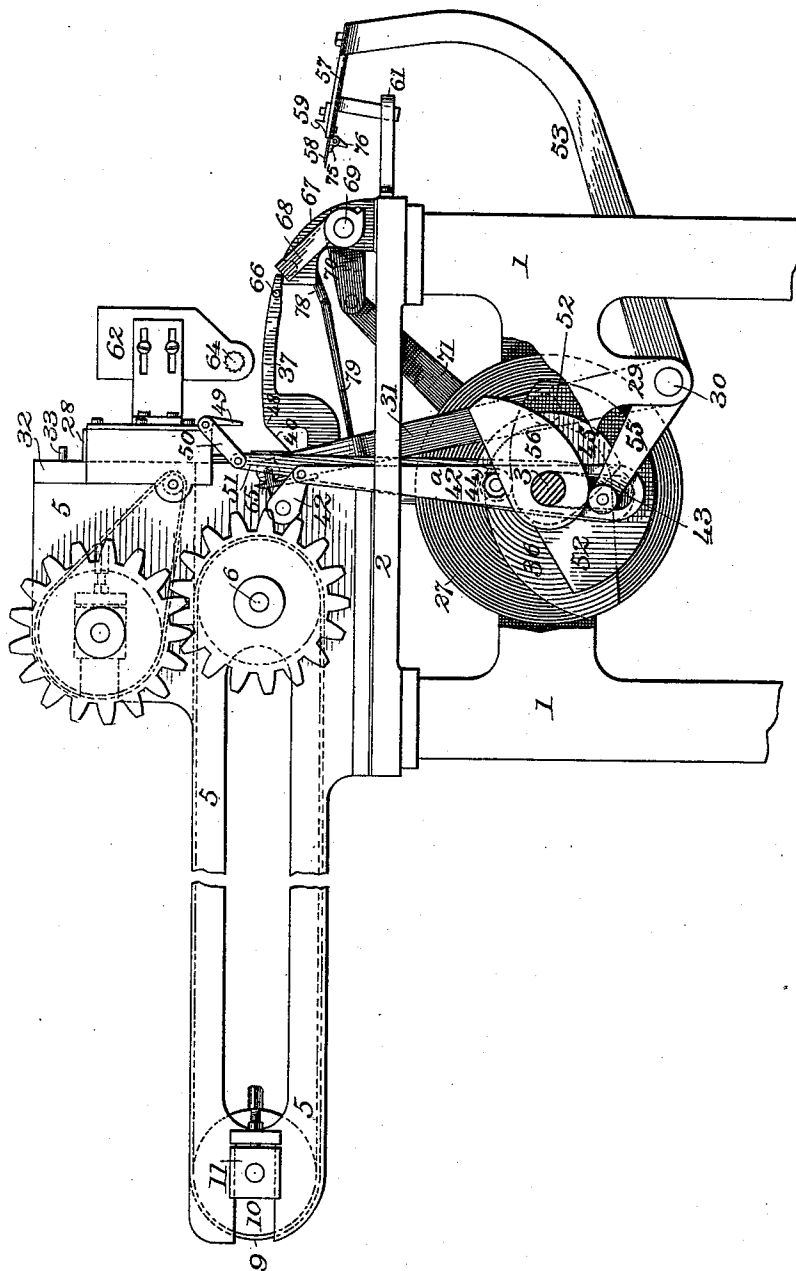
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Fig. 2.



Witnesses
Sidney P. Hainsworth
Arthur Garner

Inventor
George F. Carlisle
by *Wm. T. Howard*
Attorney's.

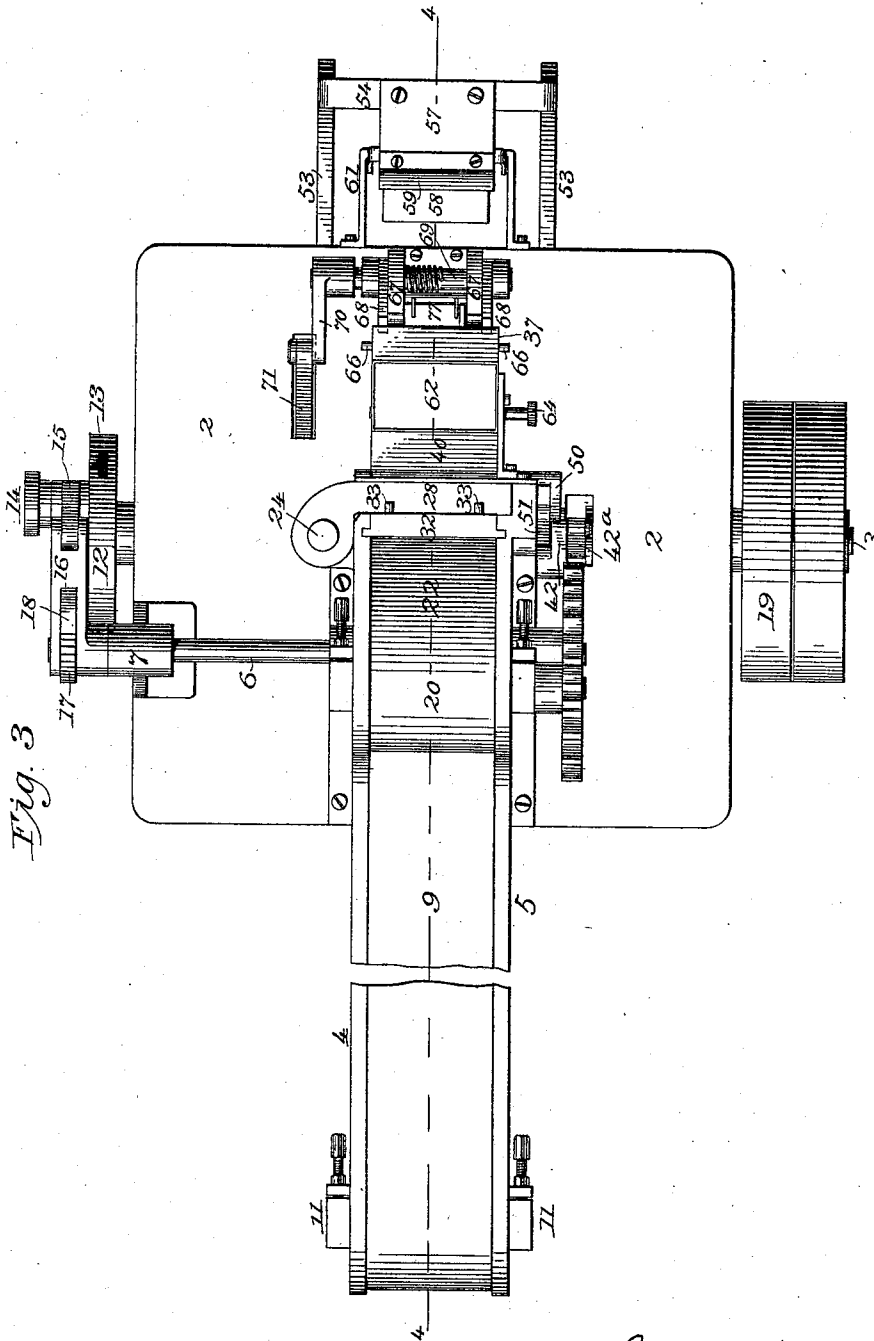
(No Model.)

4 Sheets—Sheet 3.

G. F. CARLIE.
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No. 568,661.

Patented Sept. 29, 1896.



Witnesses
Shirley P. Hedgesworth
Arthur Garner

Inventor
George F. Carlie
by *Wm. J. Howard*
Attorneys

(No Model.)

4 Sheets—Sheet 4.

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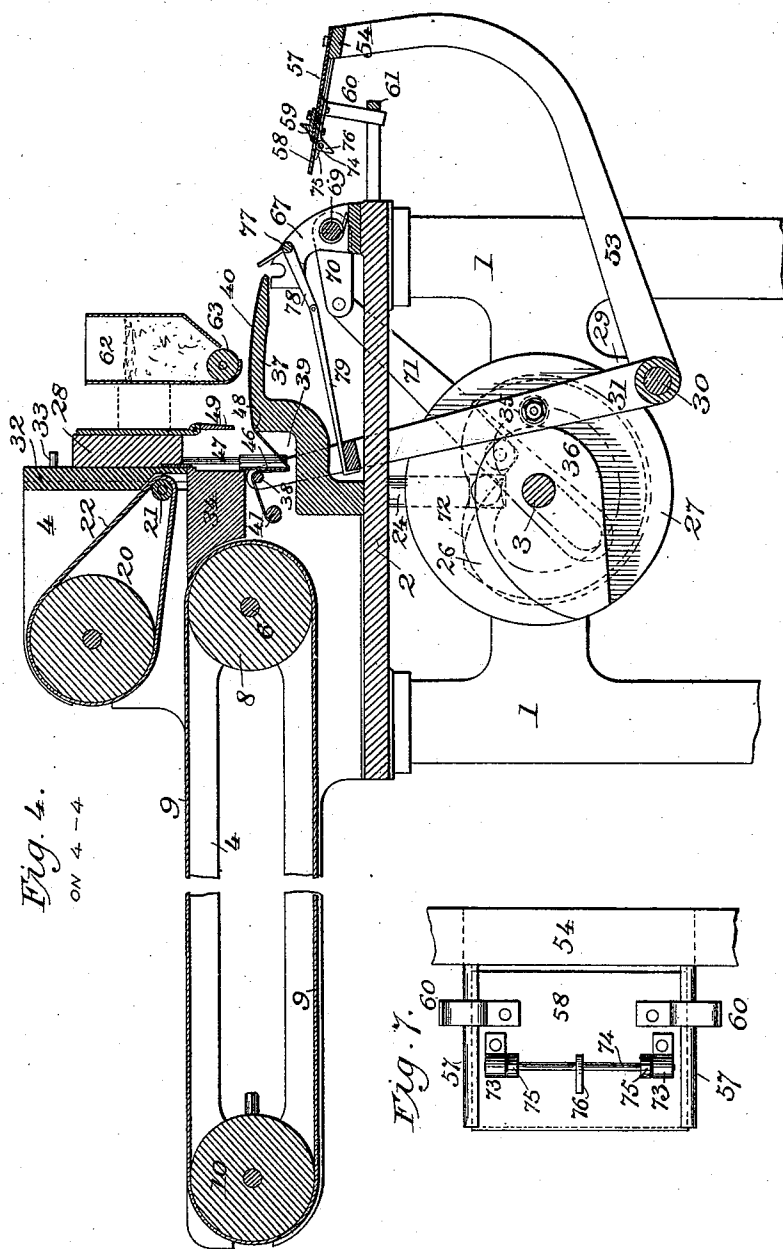


Fig. 4.
ON 4-4

Fig. 7.
60

Witnesses:

Sidney P. Hollingsworth
Arthur Garner

Inventor

George F. Carlie
by *W. T. Howard*
Attorneys.

UNITED STATES PATENT OFFICE.

GEORGE F. CARLIE, OF NEW YORK, N. Y., ASSIGNOR OF SEVEN-TENTHS
TO WILLIAM M. COULLING, THOMAS F. GREEN, AND CHARLES K.
COULLING, OF RICHMOND, VIRGINIA.

CIGARETTE-MACHINE.

SPECIFICATION forming part of Letters Patent No. 568,661, dated September 29, 1896.

Application filed November 19, 1895. Serial No. 569,463. (No model.)

To all whom it may concern:

Be it known that I, GEORGE F. CARLIE, a citizen of the United States, residing in the city of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Cigarette-Machines, of which the following is a specification.

My invention relates to an all-tobacco-cigarette machine in which the tobacco, suitably prepared, is placed on a feed-belt which moves forward intermittently, the tobacco being slightly compressed as it advances toward a cutting-knife which cuts off a sufficient amount of tobacco to form a cigarette, the severed portion entering a rolling-apron which rolls, compresses, and shapes it as a filler and applies to it a wrapper made from a tobacco-leaf, the cigarette thus made afterward passing to a support, where a pair of knives cut off its rough ends, thereby making the cigarette of predetermined length, it being finally ejected from the machine in a finished state and ready for use or packing.

My improved means for producing the above result I have shown in the accompanying drawings, in which—

Figure 1 is a front elevation of my machine, Fig. 2 a side elevation, and Fig. 3 a plan thereof. Fig. 4 is a vertical longitudinal section on the line 4 4. Fig. 5 is a side elevation of the front end of my machine, showing the operative parts in a different position from that shown in Fig. 2. Figs. 6 and 7 are detail views.

Similar numerals of reference indicate similar parts in the respective figures.

The main frame 1 of my machine stands on the floor and supports on its top a table 2, and in suitable bearings below the table is journaled the main shaft 3. Bolted to the table 2, and extending back some distance beyond and above it, is a secondary frame consisting of two side plates 4 5, separated a short distance from each other. In the secondary frame, near the forward end, I journal a shaft 6, lying parallel with the main shaft and extending beyond the edge of the table, where it is supported by a bearing 7.

On the shaft 6, between the side plates 4 5, I secure a roller 8, around which the tobacco feed-belt 9 passes to the rear of the secondary frame, where it encircles a similar roller 10, secured to a short shaft turning in adjustable bearings 11.

Keyed to the main shaft 3, outside of the main frame, is a crank-disk 12, slotted diametrically, as shown at 13, in which a crank-pin 14, movable toward or from the center, is fastened. A connecting-rod 15, through the lower end of which the pin 14 passes, extends upward and slightly backward, and is connected to a short arm 16, rocking loosely on the shaft 6 outside of the edge of the table, as shown in Figs. 1 and 3. A ratchet-wheel 17, fast to the shaft 6, rotates within a slot cut in the short arm 16, which arm carries a pawl 18, that engages with the ratchet 17. It will thus be seen that the main shaft, driven by a belt on pulley 19, will rotate the crank-disk 12, which, through the medium of the connecting-rod 15, vibrates the short arm 16, pivoted on the secondary shaft 6, and, by means of the pawl-and-ratchet connection, imparts to the shaft 6 and roller 8 an intermittent rotation. This intermittent rotation of the roller 8 causes the feed-belt to be moved forward step by step, for a purpose hereinafter explained.

The side plates 4 5 at their forward ends project upward and give support to a roller 20, mounted in adjustable bearings sliding in said plates, and a second, but smaller, roller 21, journaled in the side plates in advance of the roller 20. A belt 22 passes around these two rollers, which are in such relation to each other and the feed-belt 9 that the two belts converge as they advance, thus compressing the tobacco between them. A spur-gear on the shaft 6 engages a similar gear on the shaft of the roller 20 to drive the latter.

A sufficient quantity of tobacco, suitably prepared, having been placed on the feed-belt, it is advanced, step by step, until it reaches the belt 22, which, having a downward inclination, compresses the tobacco on the feed-belt. Shortly after reaching the

compressing-belt 22 the feed-belt disappears, passing downward around roller 8. The tobacco, however, continues to advance over a table 34, being compressed by the upper belt, until it reaches the cutting and filler-forming mechanism now to be described.

On the outside of the plate 4 and at its front edge there is a bearing 23, cast or otherwise secured to the said plate, through which a vertically-moving rod 24 slides, which rod carries on its upper end a knife 28. The lower end of the rod 24 carries a friction-roller 25, which engages with a properly-shaped cam-groove 26, formed in the side of a cam-wheel 27, keyed to the main shaft 3. Sliding vertically in grooves formed in the side plates 4 5 at the front edge, and in contact with the knife, is a weight or heavy plate 32, provided with pins 33, extending forward over the top of the knife, which, as it rises, lifts the weight.

At the time the tobacco is moving forward the knife is in an elevated position, as is also the weight. When the tobacco feed stops, as heretofore explained, a strip of tobacco extends beyond the edge of the table 34. The knife and weight now descend, the weight resting on the tobacco, while the knife continues its downward movement until it has entirely severed the projecting portion of tobacco. The knife then rises, the weight in the meanwhile resting on the tobacco, as before, to prevent the knife from dragging any fibers of tobacco with it. Having passed the tobacco in its ascent, the top of the knife, engaging the pins 33, lifts the weight, the parts returning to the first position.

In the bearings 29 on the main frame 1 is journaled a transverse shaft 30, parallel with the main shaft, but below it. An arm 31, having a long bearing at its lower end, through which passes loosely the shaft 30, is also provided with a friction-roller 35, bearing against a cam 36 on the main shaft, which, rotating, vibrates the arm to and fro. The upper end of the arm 31 is forked to pass on each side of a rolling-table 37. A roller 38 extends between the two arms of the fork above the table for rolling the cigarette, as described hereinafter.

The rolling-table 37, which is secured to the main table 2 below the cutting mechanism, has the same width as the feeding-belt or the space between the plates 4 5—that is, somewhat wider than the length of a finished cigarette—and has its upper surface concentric with the shaft 30. A depression 39 is made in the rolling-table, just under the knife.

A rolling-apron 40 is secured at one end to the front of the rolling-table, and at the other end to a take-up device, the shaft 41 of which turns in bearings in the side plates 4 5 at the rear of the depression 39. A crank-arm 42, on one end of the shaft 41, is pivoted to a connecting-bar 42^a, extending down to the main shaft, which passes through a slot 43 in the said bar and is guided thereby. A roller 44, pivoted to the side of the arm 42, rests on a

cam 45, which at the proper time raises the roller 44 and, through the connections, turns the shaft 41, winding the rolling-apron thereon and taking up the slack.

As the knife moves downward and cuts off enough tobacco for a filler the latter is prevented from falling on the rolling-apron, which at this time is not in position to receive it, by a plate 49, hinged to the frame and closing the space below the knife. As soon as the plate 46, secured to the knife-head by rods 47, descends it pushes the rolling-apron, which at this time is slack, before it, thus forming a pocket to catch the filler as it drops from the plate 49, which by this time has been turned down by means hereinafter described. The knife then rises, and with it the plate 46. As soon as the lower edge of the plate 46 has been carried above the rolling-table the arm 31 advances and carries with it the roller 38, which, being beneath the apron, folds it over the filler. By the time the roller and apron reach the corner 48 of the rolling-table the cam 45 lifts the connecting-bar 42^a, which, through the crank-arm connection, rotates the take-up shaft 41, which winds up the slack in the rolling-apron, thus forming a loop closely surrounding the filler. The arm 31, continuing its forward movement, rolls the cigarette on the table to compress it, during which operation the wrapper is applied and pasted.

On the outer end of the pivot of the hinged plate 49 is secured an arm 50, which is pivoted at its outer end to an operating-rod 51, and to which motion is given by a cam 52 on the main shaft 3, engaging a friction-roller on the side of the connecting-rod. Thus it will be seen that the hinged plate 49 will be opened or closed as the cam raises or lowers the connecting-bar 51, the said bar being guided by the main shaft passing through a slot in its lower end, as shown.

I will now describe the means for applying and pasting the wrapper. Keyed to the shaft 30 are two lever-arms 53, placed one on each side of the long bearing of the arm 31 and extending toward the front of the machine beyond the main frame 1, where they turn upward and are united a short distance above the level of the table 2 by a cross connection 54. A backwardly-extending arm 55, secured to the shaft 30, is acted upon by a cam 56, thus causing the arms 53 to turn about the shaft 30 as an axis, carrying the plate 57 across the top of the rolling-table 37, which, be it remembered, is an arc described from the axis of the shaft 30 as a center.

Screwed to the cross connection 54 and extending rearwardly is a plate 57, the side edges of which are turned under to form guides for a sliding plate 58. The said plate 57 has on its upper surface a support 59, curved on one side, as shown, and screwed to the rear edge thereof. Extending downwardly from the sliding plate 58 are two fingers 60, which strike stops 61 as the plate 57

moves away from the rolling-table, thus causing the sliding plate 58 to be projected from beneath the plate 57.

Above the rolling-table and supported by a bracket extending from the frame is a paste-receptacle 62, in the lower end of which is pivoted, a short distance above the table, a paste-roller 63. A ratchet-wheel 64 is secured on the outer end of the shaft of the paste-roller, which is operated by a finger 65, pivoted to the upper end of the arm 31, as shown.

The parts being in the position shown in Fig. 2, a wrapper cut to the proper size from a tobacco-leaf is placed on the sliding plate 58 and curved face of the support 59. The cam 56 on the continuously-running main shaft 3 at this moment acts on the arm 55, rocking the shaft 3 backward and with it the arms 53, that carry the plate and support on which the wrapper is placed. The plate and support holding the wrapper continue to move backward toward the rolling-table until the fingers 60 strike pins 66, projecting from the side of the rolling-table. The sliding plate 58 will then be arrested, but the plate 57, carrying the support 59, continues its movement until it covers or passes over the plate 58. The result of this is to bring the edge of the wrapper which is on the curved support against the paste-roller, supplying it with paste, while that part which had been supported by the sliding plate is left on the rolling-apron which covers the top of the rolling-table. During this operation the filler has entered the pocket in the rolling-apron, the arm 31 has advanced to the corner 48 of the rolling-table, and the slack in the apron has been taken up to make the loop which carries the filler. The arm 31, advancing with the filler toward the wrapper, and the wrapper on its support moving in the direction of the filler meet just under the paste-roller. The wrapper-support then rapidly returns, but the rolling device continues to advance, drawing the wrapper, the edge of which it had caught just before the wrapper started to return, into the loop or bight and rolling it around the filler, thus forming a cigarette. As the arm 31 passes the pasting device the finger 65 strikes the ratchet-wheel 64 on the paste-roller, which rotates it sufficiently to bring a fresh supply of paste for each wrapper. The finger 65 swings on its pivot without operating the ratchet 64 when the rolling-arm returns.

Two brackets 67, secured to the main table 2 at the front of the rolling-table, are provided with U-shaped grooves on their top, near the rolling-table, to receive the cigarette from the rolling-apron. Pivoted to the brackets 67 on a shaft 69 are two knives 68, one on the outside of each bracket. An arm 70, also secured to the shaft 69, is connected by a bar 71 with a cam 72 and so timed that, as the rolling and wrapping mechanisms are retreating, the knives will descend and cut off the rough and ragged ends of the cigarette, mak-

ing the cigarette of the proper length, the outer sides of the brackets being separated by the length of a cigarette.

It sometimes happens that a cigarette does not fall into the bracket 67, but clings to the apron, being held there by a little paste squeezed out during the process of rolling. To remedy this defect I secure to the under side of the plate 57 two brackets 73, in which is pivoted a short shaft 74, carrying two depending fingers 75 and a stop-finger 76. Should a cigarette fail to leave the apron, on the next advance of the plate 57 the fingers 75 will rock on their pivot and pass over the cigarette, but on the return movement the stop-finger 76, bearing against the plate, will keep the fingers close to the apron, thereby carrying the cigarette into the U-shaped grooves of the brackets 67.

To remove the cigarettes from the machine, after trimming the ends, I pivot to the brackets and between them a shaft 77, from which project two fingers extending backward just below the U-shaped grooves. An arm 78, fast to the shaft, extends downward nearly to the main table, where it is pivoted to a rod 79, extending under the rolling-table for some distance, and having a foot-piece to engage with the rolling-arm, which, through the connection described, will rock the shaft, raise the fingers, and eject the cigarette after it has been trimmed.

Having thus described my invention, what I claim is—

1. In a cigarette-machine, the combination of an intermittently-moving feed-belt, an intermittently-moving endless compressor-belt above the feed-belt, a table under the compressor-belt and extending beyond the feed-belt, a vertically-moving knife for severing the unformed filler from the body of tobacco, a vertically-sliding weight having loose connection with the knife, adapted to be lifted thereby, and to rest on the tobacco while the knife continues its downward movement, a rolling-apron, a plate secured to the knife and moving with it to form a pocket in the apron, a plate hinged to a fixed part of the machine and having an intermittent vibratory movement under the knife and above the rolling-apron, and a take-up device in the latter, substantially as and for the purposes set forth.

2. In a cigarette-machine, the combination of an intermittently-moving feed-belt, an intermittently-moving endless compressor-belt above the feed-belt, a table under the compressor-belt and extending beyond the feed-belt, a vertically-moving knife for severing the unformed filler from the body of tobacco, a vertically-sliding weight having loose connection with the knife, adapted to be lifted thereby and to rest on the tobacco while the knife continues its downward movement, a rolling-apron, a rolling-table, a roller rocking to and fro over said table under the rolling-apron, a plate secured to the knife and moving with it to form a pocket in the apron, a

plate hinged to a fixed part of the machine and having an intermittent vibratory movement under the knife and above the rolling-apron, and a take-up device in the latter, substantially as and for the purposes set forth.

3. In a cigarette-machine, the combination of an intermittently-moving feed-belt, an intermittently-moving endless compressor-belt above the feed-belt, a table under the compressor-belt and extending beyond the feed-belt, a vertically-moving knife for severing the unformed filler from the body of tobacco, a vertically-sliding weight having loose connection with the knife, adapted to be lifted thereby and to rest on the tobacco while the knife continues its downward movement, a rolling-apron, a rolling-table, a roller rocking to and fro over said table under the rolling-apron, a plate secured to the knife and moving with it to form a pocket in the apron, a plate hinged to a fixed part of the machine and having an intermittent vibratory movement under the knife and above the rolling-apron, a take-up device in the latter, and wrapper feeding, pasting and cutting devices, substantially as shown and described.

4. In a cigarette-machine, the combination of a rolling-table, a rolling-apron thereon, the fixed stops 61, the plate 57 carrying the curved support 59, and adapted to move toward and from said rolling-table, the independently-sliding plate 58 carried and guided by said plate 57, and the fingers 60 on the plate 58, which fingers, in the movement of the said plate 57 away from the rolling-table, strike

the stops 61, thus causing the sliding plate 58 to be projected from beneath said plate 57, substantially as set forth.

5. In a cigarette-machine, the combination of a filler-forming mechanism, such as described, the plate 57 carrying the curved support 59 and adapted to move toward and from the rolling mechanism, the independently-sliding plate 58 carried and guided by the plate 57, fingers 60 extending downwardly from said sliding plate, and a rolling-table forming a part of the rolling mechanism and having pins 66 projecting from the sides thereof, and adapted to strike the fingers 60 for arresting the movement of the sliding plate 58, while the plate 57 and the stop 59 continue their movement, substantially as set forth.

6. In a cigarette-machine, in combination with a wrapper-feed, a shaft 74 adapted to rock in bearings secured to the under side thereof, depending fingers 75, a stop-finger 76 secured to the said shaft, and a rolling-apron 40, whereby the fingers 75 will pass over a cigarette that may adhere to the apron as the wrapper-feed moves toward the filler-rolling mechanism, but remove it from the said apron on its return, substantially as shown and described.

In testimony whereof I hereunto set my hand and affix my seal.

GEORGE F. CARLIE. [L. S.]

Witnesses:

JAMES A. STEWART,
ANNIE G. CARRICK.