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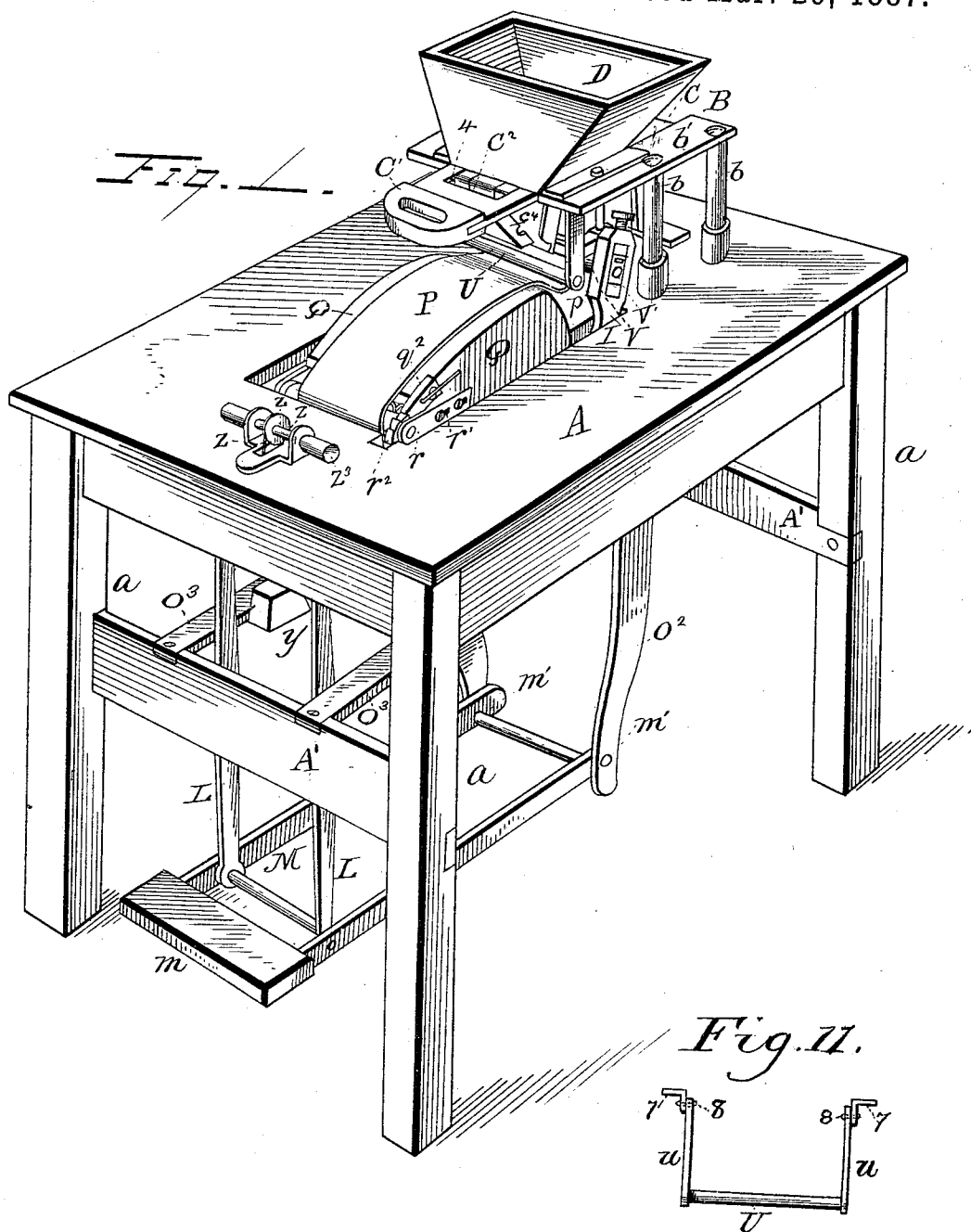
J. PRANGLEY.

5 Sheets—Sheet 1.

CIGAR MACHINE.

No. 360 046.

Patented Mar. 29, 1887.



Witnesses
J. W. Reynolds
W. R. Haight

Inventor
James Prangley
By his Attorney
Wm H Babcock

(No Model.)

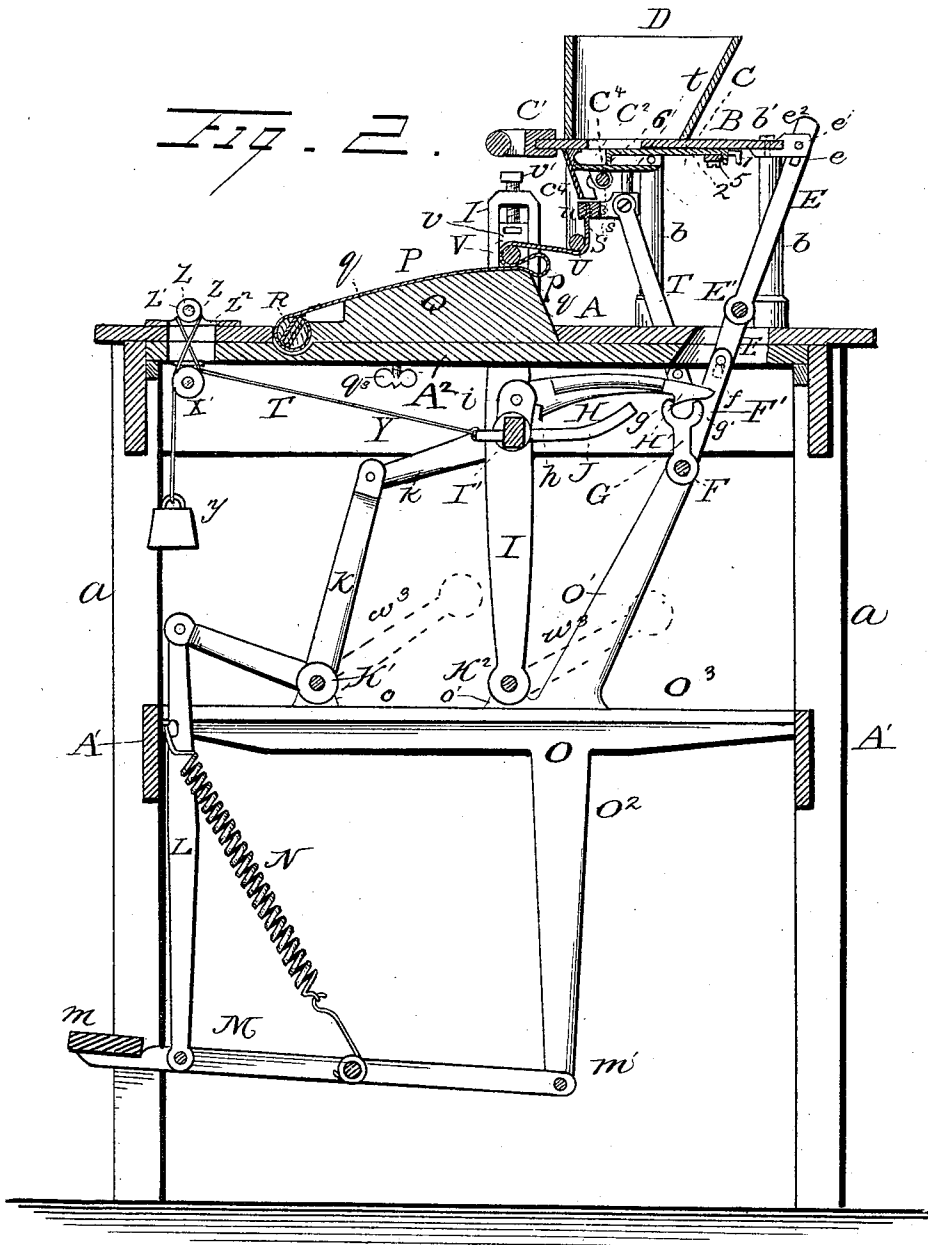
5 Sheets—Sheet 2.

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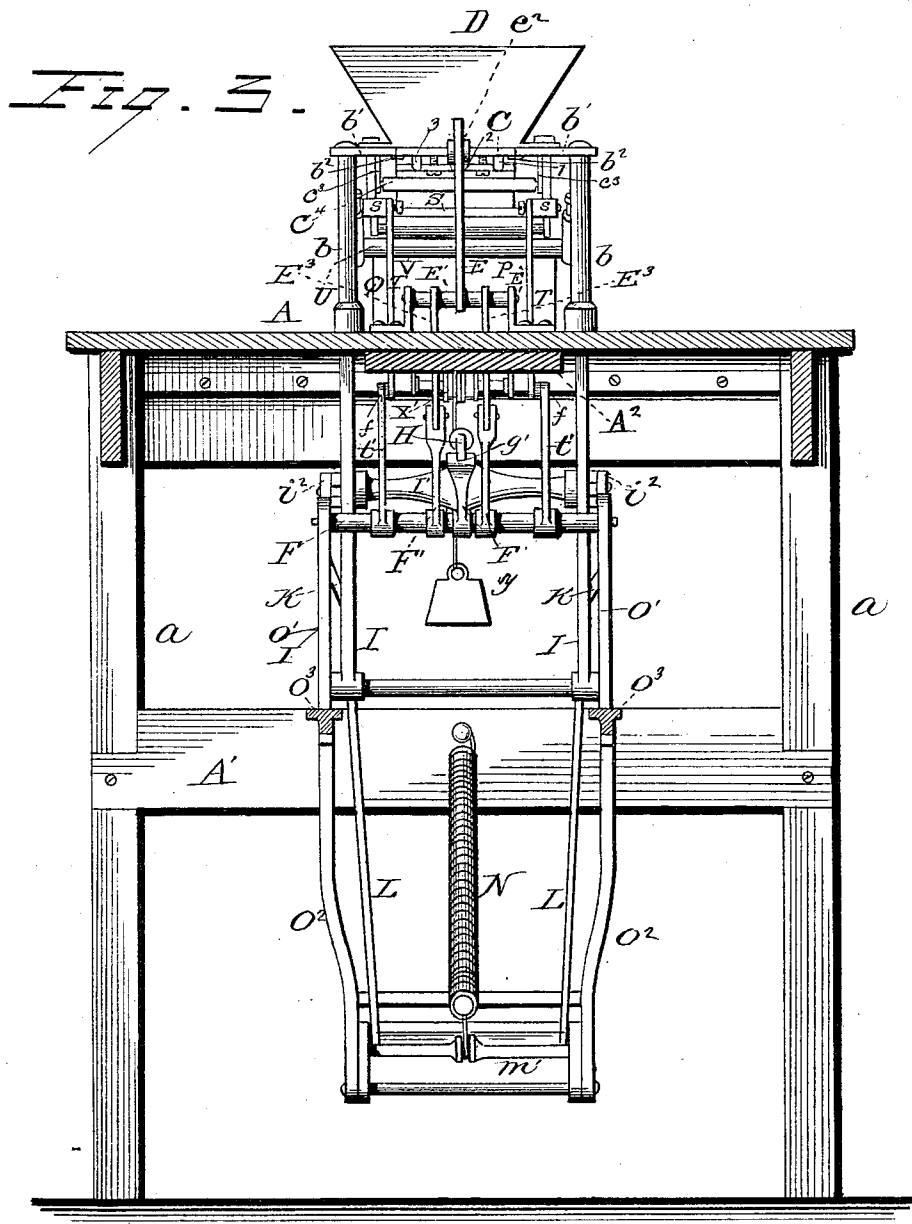
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5 Sheets—Sheet 3.

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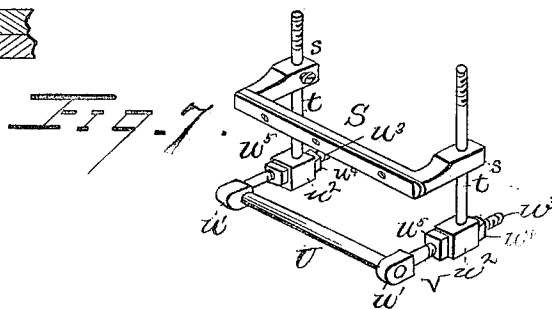
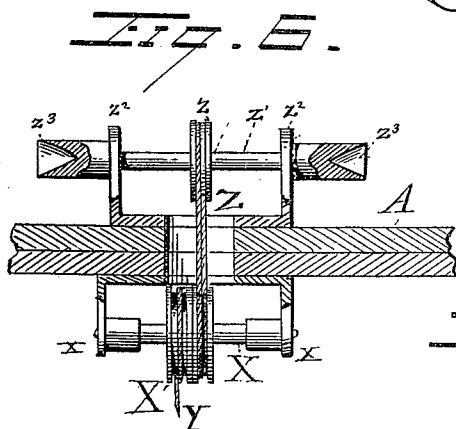
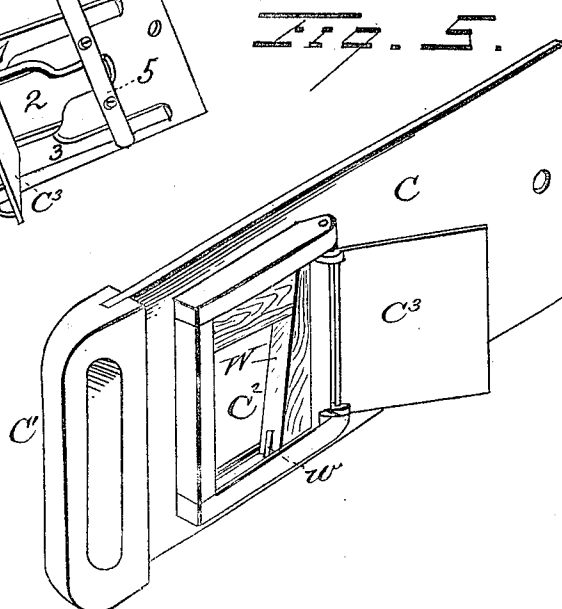
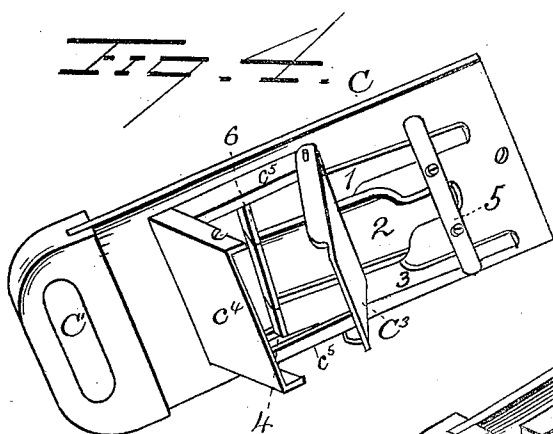
5 Sheets—Sheet 4

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5 Sheets—Sheet 5.

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Fig. 10.

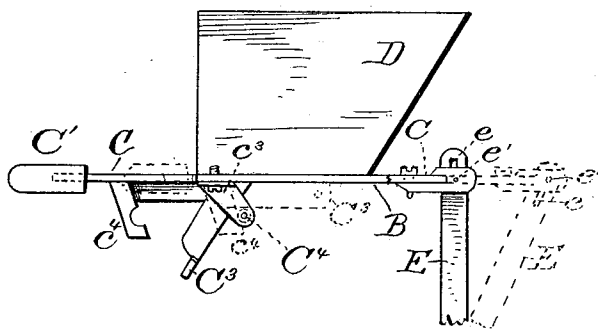


Fig. 9.

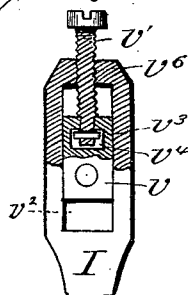
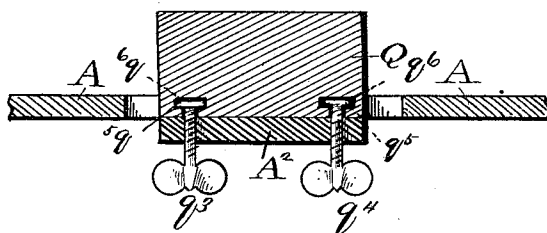


Fig. 8.



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UNITED STATES PATENT OFFICE.

JAMES PRANGLEY, OF LANCASTER, PENNSYLVANIA.

CIGAR-MACHINE.

SPECIFICATION forming part of Letters Patent No. 360,046, dated March 29, 1887.

Application filed October 28, 1886. Serial No. 217,419. (No model.)

To all whom it may concern:

Be it known that I, JAMES PRANGLEY, a citizen of the United States, residing at Lancaster, in the county of Lancaster and State of Pennsylvania, have invented certain new and useful Improvements in Cigar-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to cigar-machines of the kind employing an apron, which receives the filling and the binder, or binder and wrapper, in a pocket or slackened part of said apron, a roller being moved forward against said apron above said pocket, so as to roll the contents of said pocket on a molding-board, forming a cigar or a bunch, as the case may be. Some of my improvements would be applicable, also, to any other form of cigar-machine.

My invention consists, first, in certain improvements in feeding mechanism and regulating devices therefor; secondly, in certain improvements in devices for alternately loosening and tightening the apron; thirdly, in certain devices for rolling the pocket of the apron forward to form a bunch or cigar; fourthly, in the peculiar construction of the molding-block, the apron-holding roller attached thereto, and their adjusting devices; fifthly, in the devices for forming the head of the cigar; and, finally, in certain additional details of the machine, all as hereinafter fully set forth and claimed.

Figure 1 represents a front perspective view of a machine embodying my invention, taken from the right, and the cigar-forming roller being at the beginning of its travel. Fig. 2 represents a vertical section through the machine from front to rear taken on a plane a little to the right of the hook and horn which oscillate the rear rock-shaft, and looking to the left, the cigar-forming roller being in a medium position with the supports vertical and the apron tightened. Fig. 3 represents a vertical section of the machine from side to side, taken just back of the hopper-supporting frame and looking forward, the parts being in the same position as in Fig. 2. Fig. 4 represents a detail perspective view from below of the feed-slide and its adjusting devices. Fig. 5 represents a similar view of a modified form of slide. Fig. 6 represents a front elevation

through the head-forming devices, some of the parts being broken away. Fig. 7 represents in detail perspective a modification of the roller which holds down the apron and the devices for supporting the said roller, these being rigid instead of pivotal, as in Figs. 1, 2, and 3. Fig. 8 represents a detail view in cross-section of the molding-block and a part of the table, the adjusting-screws for said block being shown in elevation. Fig. 9 represents in detail a side elevation, partly broken away, of the upper end of one of the side bars for the lever-frame, the bearing-block held therein, and the adjusting-screw for said bearing-block. Fig. 10 represents a side elevation of the hopper, the top of the hopper-supporting frame B partly broken away, the feed slide, the hinged bottom attached thereto, the roller for closing said bottom, the bearings for said roller, and the arm E, attached to said slide. The full lines show the position of the moving parts when the bottom is open, and the dotted lines show their position when the bottom is closed. Fig. 11 represents a detail view of the roller U, hereinafter described, its suspending-bars, and the lugs and pivots by which said bars are suspended.

A designates the supporting-table of my machine, resting on legs *a*, and preferably open underneath.

B designates a metallic frame provided with stout legs *b*, rising from the rear part of the table A. This frame B consists of two corresponding parts, each having two of such legs and a metal top piece, *b'*, extending from front to rear. A guideway, *b''*, is formed in the inner edge of each top piece, *b'*, to allow the play back and forward of a feed-regulating slide, C, the top of which is flush with the tops of pieces *b'*. A hopper, D, is arranged immediately above this feed-slide, and provided at its bottom with side flanges, which are rigidly bolted to frame B through top pieces, *b'*.

The slide C may be operated by hand, and to this end has at its front end a handle, *C'*; but I prefer to operate it automatically through the medium of an arm, E, which is vertically slotted at *e*, near its upper end, and receives in said slot a transverse pin, *e'*, extending across the lips of a divided lug, *e''*, formed on the rear end of said slide. This arm E is mounted on a rock-shaft, *E'*, which is journaled in bearings *E''*, attached to the top of

table A. Said rock-shaft E' is also provided with downwardly-extending arms E², which pass through an opening in said table A. The rock-shaft E' and arms E² E³ move together in their oscillations. The lower ends of the arms E² are longitudinally slotted, and receive in said slots a transverse pintle, *f*, which passes through the bifurcated upper ends of arms F', mounted on and moving with another rock-shaft, F, arranged transversely below the table. The lower end of each arm E² is located between the forks of the corresponding arm, F', and the pintle *f* of course makes a loose connection between these arms, like that between the similarly-slotted arm *e* and the divided lug *e*². Thus motion is transmitted, as usual in such pin and slot connections, without binding.

The rock-shaft F is further provided with a short rigid arm, G, having its upper end forked, the forward fork, *g*, being higher than the rear fork, *g'*, and the former being rounded forward on top, while the top of the latter is rounded rearward. This is to allow the passage backward over fork *g* and forward over fork *g'* of an approximately-horizontal hook, H, which is carried forward and backward by a rocking lever-frame, I. The connection between the rear end of this hook and this lever-frame is made by a pivot-pin passing through the former and also through a bifurcated lug, *i*, on a cross-bar, I', of the latter. Hook H has a vertical vibration on said pivot-pin, being provided near its rear end with a downwardly-extending shoulder, *h*, which comes in contact with cross-bar I' and prevents the hook from falling too far. At the forward end of the hook there is a downwardly-extending catch, H', having an approximately vertical forward face (using the term with respect to the front of the machine) and a curved under face which extends to the rounded tip of the hook. Just under this hook a rigid horn, J, extends backward from cross-bar I', so that it may come into contact with fork *g* when lever-frame I rocks backward. This horn is not so long as hook H, and consequently the latter rides backward over fork *g* and drops on fork *g'* before horn J touches the former fork. The said horn then pushes back the fork *g* and the arm G, rocking the shaft F backward. When the lever-frame I rocks forward again, the catch H' of hook H drops between the forks *g* *g'*, and its vertical forward face engages with the rear face of fork *g*. The forward movement of lever-frame I and hook H, therefore, by pulling on arm G rocks shaft F forward. This continues until the catch H' rides forward over fork *g* and leaves arm G free. This release is due to the change of relative position of the catch H' and the fork *g* as the lever-frame I rises to a vertical position. The rear fork, *g'*, of arm G is not essential to this construction, but lessens friction by presenting a rounded surface to the curved face of the catch H' and holding the body of the hook H out of contact with the forward fork, *g*, of said

arm. By the alternate thrust of horn J and pull of hook H the rocking lever-frame I imparts similar motion to shaft F during the latter part of the backward motion of said lever-frame and the early part of its forward motion; but during the greater part of the vibration of said lever-frame said rock-shaft F is left at rest.

The rocking motion of rock-shaft F imparts similar rocking motion to shaft E' through the arms F' and E². The arm E of course moves with the shaft E', and communicates endwise reciprocatory motion to the slide C. As the motion of the slide C depends on that of the rock-shaft F, it follows that whenever said rock-shaft F is left at rest by said lever-frame I said slide C will be left at rest also. Thus said slide receives an intermittent reciprocatory motion from said lever-frame and the intermediate connections.

The lever-frame I is pivoted at its lower end, and provided with lateral studs *i*² opposite the ends of cross-bar I'. From these studs links *k* extend to the upper arms of angle-levers K, and pitmen L extend down from the other ends of said angle-levers to treadle-frame M. This frame has at its forward end the treadle *m*, and is pivoted at its rear end on a cross-rod, *m'*. A replacing-spring, N, extends from said treadle-frame to one of the cross-pieces A' of table A, or to some other fixed part of the machine. Instead of it, I may, as indicated by dotted lines in Fig. 2, attach a weighted arm, *w*², to the rear side of rock-shaft K', on which angle-levers K are mounted, or to the rear side of rock-shaft K², on which the lower end of lever-frame I is mounted.

A rigid metal frame, O, attached to the side pieces, A', affords support to all the moving parts of the machine below the table thus far described. The upwardly-extending arms O' of frame O afford bearings for rock-shaft F, and the downwardly-extending arms O² receive the cross-rod *m'*. Bearings *o* *o'* are formed on the tops of the main horizontal bars O³ of said frame O. The rock-shafts K' K² are journaled in these bearings, respectively. The frame O consists of two counterpart castings or wrought-metal pieces, each consisting of an upper arm, a lower arm, and a horizontal bar, as above stated. They have no connection with each other, except by means of the cross-rod and rock-shafts, but are independently secured to the cross-pieces A' of the table A. Incidentally they serve to brace table A.

I do not wish to be confined to the above-described mechanism for operating slide C, though I find it better than any other which I have tried or know of, for other automatic arrangements and combinations effecting the same general result may be substituted.

The slide C is a flat plate or board longer than broad having an opening, C², near its inner end and flanges or ridges *c*³ on its under side along the side edges of said opening. A fixed guard-plate, *c*⁴, is attached to the under

side of said plate at the front edge of said opening—that is to say, at the edge nearer the treadle. Said guard-plate extends downward and is slightly inclined backward. A bottom, 5 C³, consisting of a flat plate, is hinged to the other side of said slide at the opposite edge of opening C², so that it may close upward, converting said opening into a pocket. This closing is effected by the contact of the said 10 hinged bottom C³ with a fixed transverse rod, C⁴, (shown in detail in Fig. 11,) when the slide C is drawn backward into the position shown in Fig. 2. Under such circumstances the tobacco-filling drops from the hopper into said 15 pocket C², the bottom of the hopper being left open to allow its passage. When the slide C moves forward, or, in other words, to the left, as shown in Fig. 2, the hinged bottom gradually falls into the inclined position shown in Fig. 4. The opening or pocket C² at the same 20 time passes inward beyond the hopper, and the bottom of the latter is closed by the solid part of the slide. The dropping of the bottom C³, as described, of course allows the tobacco contained within the pocket C² to fall down on 25 the apron P. A loose part or pocket, p, in said apron receives said filling. By the devices above described, operating as stated, a charge of tobacco-filling is supplied by the hopper to 30 pocket C² at each backward motion of said slide, and the same charge is deposited on the apron by the dropping down of the bottom of the pocket C² when the slide C moves in the opposite direction.

35 The transverse rod C⁴ is supported at its ends in brackets c⁵, attached to the hopper-supporting frame B. Said rod is preferably free to turn therein as a roller for the purpose of reducing friction. The guard-plate c⁴ is 40 somewhat trough-shaped, having side flanges which are recessed to fit against rod C⁴. The hinged bottom C³ is of shape similar to that of said guard-plate. The side flanges of said hinged bottom C³ cover the sides of the flanges 45 c⁵ when said bottom is closed up against the latter. The overlapping flanges of the guard-plate c⁴ and hinged bottom C³ prevent any lateral dispersion of the tobacco-filling in the act of discharge.

50 My adjusting devices allow me to regulate not only the total amount of tobacco filling in the cigar, but also its distribution to the ends and the middle thereof, so that I may produce at will by this machine a cigar of any 55 size having any desired ratio of the diameter of either end to that of the middle or to that of the other end. For this purpose I provide the sides of the pocket C² with longitudinal grooves 4, and in these I fit longitudinally-movable plates 1 and 3, with a broader one, 2, 60 between them. At their rear ends these adjusting-plates 1 2 3 are provided with downwardly-turned ears 6, to prevent them from passing forward beyond a transverse clamp-bar, 5, which is screwed to the slide C. By 65 loosening this clamp-bar and moving one or more of these plates forward or backward the

supply of tobacco-filling to the ends and middle of the cigar may be regulated at will.

Q designates the molding-block, the surface of which consists of two parts, the larger 70 forward part, q, being the segment of a circle of considerable radius, while the rear part, q', falls abruptly, allowing the slack part of the apron to make a bight or pocket, p. The forward end of this apron is attached to a winding-roller, R, which is journaled in bearing-plates 75 r, attached to the sides of the molding-block Q. These bearing-plates are provided with longitudinal slots r', through which the fastening-screws pass. These slots allow either one of the bearing-plates to be adjusted longitudinally 80 independently of the other bearing-plate. In this way the capacity of one end of the bight or pocket p of apron P may be regulated at will, 85 so as to exceed or fall short of the other end. A ratchet-wheel, r², on roller R, and a pawl, q², on block Q, combine to regulate the tightening or loosening of the apron as a whole, and, consequently, the size of said pocket. 90 Said molding-block rests in table A and on a fixed board or plate, A², extending from front to rear of said table and forming part of the frame of the machine, and set-screws q³ q⁴ pass up through this fixed piece A² under opposite 95 sides of this molding-block to lift one side or the other, as preferred. Each one of these screws q³ q⁴ enters a recess, q⁶, in the bottom of said molding-block Q, as shown in Fig. 8, and is provided with a head or cross-piece, q⁵, 100 within said recess. By turning screw q³ to advance the head q⁵ upward the proximate side of said molding-block Q will be necessarily raised. As the corresponding side of apron P is of course lifted by said block, the corresponding end of bight or pocket p is elevated 105 above the other end of the latter. The tobacco filling which falls from above will necessarily tend by gravity to the lower end of said bight. This will increase the accumulation of 110 said filling at said lower end of said bight. Of course the inclination of the bight will be in the reverse direction if screw q⁴ be turned so as to raise its side of molding-block Q instead of turning screw q³, as before stated. 115

The rear end of the apron P is attached to a cross bar, S, having rearwardly-extending blocks s, which are perforated and slide up and down on guide-rods t. Connecting-rods 120 T extend from these sliding blocks to arms t', which are mounted on rock-shaft F and rock therewith. By means of these connections every time the treadle is depressed and the pitmen L, angle-levers K, links k, lever-frame I, hook H, and arm G operating 125 as hereinbefore described the bar S is raised and the rear end of the apron drawn up to tighten the hold of pocket p on the tobacco, this motion lasting only until hook H releases arm G, and when the treadle rises sufficiently 130 to bring the horn J against arm G the bar S correspondingly descends and the pocket p is slackened and enlarged.

To draw the apron properly down behind

the molding-block and forming-pocket *p*, I make use of a roller or cross-bar, *U*, which is suspended by pivoted bars *u* from the under side of hopper-frame *B*, hanging freely, so that its weight may press said apron back far enough beyond the molding-block *Q* to insure the dropping of pocket *p* behind the face *q'* thereof. The attachment of bars *u* to said frame *B* is effected by means of pivots 8, extending laterally from lugs 7. This roller *U* is preferably left free to rotate for the purpose of lessening friction.

The work of rolling the bunch or cigar is performed by a transverse roller, *V*, carried by the upper end of frame *I*, which roller is pressed forward thereby against the rear of apron *P*, above pocket *p*, as the bar *S* ascends. This forward pressure of roller *V* is effected by the forward rocking of lever-frame *I*, due to the treadle and the intervening devices, before described. These devices combine to tighten the pocket on the filling in the form of a tube at the junction of faces *q* and *q'* of molding-block *Q*. Then passing on over the former-face, the filling is rolled within the binder to form a bunch, or within the binder and wrapper at once to form a cigar. In the former case the operator takes the binder and puts its forward edge so that it will come within or nearly within the pocket, holding the rear edge by manual pressure. Under such circumstances the filling is necessarily rolled within the binder and the binder is rolled on itself, completing the bunch. When the entire cigar is made at once, the wrapper and binder are laid on together, the former being undermost and held and rolled in the same manner. As the bar *S* descends, loosening the apron, the roller *V* returns to its former position, and the weight of the roller *U*, pressing obliquely under the influence of gravity against that part of the apron *P* which is behind it, carries the slack of the apron back sufficiently to form pocket *p*. All is then ready for another pressure of the foot on the treadle and the making of another cigar or bunch.

The work of roller *V* is that of a bar; but its rotation is advantageous in lessening friction. Its ends are journaled in bearing-blocks *v*, which are vertically adjustable, by means of screws *v'* in guideways *v''*, in the upper ends of the side bars of frame *I*. To permit this, the lower end of each screw *v'* is provided with a transverse pin, *v'''*, as shown in detail in Fig. 9. This pin is free to turn within recess *v'''* of bearing-block *v*, but prevents said screw *v'* from separating from said bearing-block *v*. The upper end of each side bar of lever-frame *I* is screw-tapped at *v''*, as shown in Fig. 10, to receive said screw *v'*. Consequently, the turning of the screws *v'* in said screw-tapped side bars of lever-frame *I* causes the bearing-blocks *v* to move upward or downward, according to the direction of said turning. By these screws *v'* and blocks *v*, I am enabled to adjust one end of the roller *V* to a higher position than the

other. Of course, the higher end of roller *V* will roll a greater amount of tobacco-filling as tightly as the lower end of said roller will roll a less amount thereof. Thus the independent adjustability of the ends of said roller adapts it to roll a bunch or cigar which is larger at one end than at the other.

As shown in Fig. 7, I sometimes provide the cross-bar or roller *U* with bearing-blocks *u'* for its ends. These blocks are provided with screw-threaded rods *u''*, which extend horizontally through blocks *u'''* on the vertical rods *t*, hereinbefore described. The horizontal rods *u''* are provided with adjusting-nuts *u'''*, by means of which either end of said cross-bar or roller *U* may be adjusted forward or backward independently of the other. In this modification the cross-bar or roller *U* does not operate by its weight against the apron. It is stationary, and acts merely as a check for said apron *P*, leaving the latter to rotate the bight or pocket *p* by its own weight.

Sometimes, as shown in Fig. 5, I groove the sides of pocket *C'* in the slide *C*, and fill it to the desired shape with rubber-packed blocks, removing one and inserting another till the proper shape is secured for producing the style of cigar then in view. This modification is obviously less satisfactory than the neater and more easily managed adjusting devices hereinbefore described in referring to said slide. The blocks are marked *W* and the packing *w* in said Fig. 5.

X designates a small horizontal shaft turning in bearings *x* on the under side of table *A*. This shaft is provided with a doubly-grooved pulley, *X'*. A cord or chain, *Y*, passes from the rear end of horn *J* over one of the grooves of said pulley, the forward end of said cord being provided with a weight, *y*. The cord may be attached directly to lever-frame *I*. A second cord, *Z*, passes as an endless belt around the other groove of said pulley *X'*, and also around a grooved pulley, *z*, turning with a shaft, *z'*, which is journaled in bearings *z''* on the top of table *A*. The ends of this shaft are enlarged and provided with conical terminal recesses *z'''*, for forming the heads of cigars. The operation of the treadle rotates this shaft first in one direction, then in the other. During the former rotation it neatly finishes the head of the cigar.

Instead of using a treadle, steam-power may be of course employed to drive the machine, using a suitable cam and pitman connection.

Divers other improvements in the details of construction and combination may be made without departing from the spirit and scope of my invention.

This machine may of course be used for making cigarettes or cheroots, instead of cigars proper, or bunches therefor.

The same hopper may be used for supplying two aprons and their operative machinery.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A feed-slide provided with a discharge opening or pocket, in combination with a hopper, cigar-forming mechanism, and a series of independently-adjustable plates for adjusting the size and shape of said opening to suit the desired size and shape of the cigar, substantially as set forth.

2. A feed-slide having an opening or pocket, in combination with three movable plates arranged side by side in said opening, any one of said plates being adjustable to fill more or less of said opening, and thereby vary the size and shape of the cigar, substantially as set forth.

3. A feed-slide having an opening or pocket provided with longitudinal grooves in its inner sides, in combination with movable pieces which fit in said grooves, and are adjustable to vary the size and shape of said opening or pocket, for the purpose set forth.

4. A slide having several adjustable plates for varying the size and shape of its opening, in combination with a clamp-bar for holding said plates in proper position after adjustment, and screw-fastenings whereby the said bar may be loosened at any moment to allow the adjustment of one or more of said plates, substantially as set forth.

5. A slide provided with a hinged downwardly-dropping bottom, in combination with a reversely-inclined guard-plate carried by said slide, and a bar or roller, into contact with which said bottom is brought as it moves back, in order that said bottom may be raised for closing the pocket in the slide while said pocket is under the hopper.

6. A slide provided with an opening or pocket, a hinged downwardly-dropping bottom for said pocket, and a reversely-inclined guard-plate, substantially as and for the purpose set forth.

7. A rock-shaft and an arm, G, carried thereby, in combination with a feed-slide, and connections between said shaft and slide, a rocking frame, and a pivoted hook carried by said frame, which engages said arm as it moves forward, and thus rocks said shaft in that direction until said hook and said arm automatically separate, as described.

8. The pivoted hook H and horn J, and a rocking-lever frame which carries them backward and forward, in combination with a rock-shaft having an arm which is alternately pushed by said horn and pulled by said hook, a slide, and connecting devices between said slide and said rock-shaft, substantially as set forth.

9. The arm G, bifurcated to form forks *g g'*, rounded on top in opposite directions, in combination with the pivoted endwise-moving hook H, having a shoulder to prevent it from falling too far, and a catch, H', with concave under face and vertical rear face, actuating mechanism for said hook, a rock-shaft carrying said arm, a feed-slide, and connecting devices between said rock-shaft and said slide, substantially as set forth.

10. A hopper, cigar-making devices, and a feed-slide, in combination with devices for giving intermittent reciprocatory motion to said feed-slide, consisting of a rocking frame, a treadle, and intermediate levers and rods for giving it motion, a hook and horn carried by said frame, a rock-shaft carrying an arm which is alternately pushed and pulled by these devices during a part of the oscillation of said frame, another rock-shaft, arms extending from said rock-shafts toward each other, and having pin-and-slot connections to allow play, and another arm on the latter rock-shaft having similar connection with the slide, substantially as set forth.

11. In combination with a cigar-forming apron and molding-board, a roller, U, arranged in front of the rear part of said apron, arms whereby said roller is held in one position to compel said apron to form a bight or pocket, a cigar-forming roller traveling over said molding-board, a vertically-movable bar, S, to which the rear end of said apron is attached, and a rock-shaft and connections whereby said bar is raised and lowered and said cigar-forming roller carried backward and forward, substantially as set forth.

12. In combination with a cigar-forming apron and molding-board, a roller, U, arranged in front of the rear part of said apron, and pivoted arms whereby said roller is suspended in one position to bear continually by gravity against said apron and assist in forming a pocket, *p*, therein without the aid of machinery, substantially as set forth.

13. The rock-shaft F and devices for intermittently actuating it, in combination with the horizontally-reciprocating slide C, the vertically-reciprocating bar S, to which the rear end of the apron is attached, and the intermediate connecting devices through which said slide and said bar receive simultaneous intermittent motion from said rock-shaft, substantially as set forth.

14. In combination with the apron and cigar-forming roller, the winding-roller to which the front end of said apron is attached, longitudinally-slotted bearing-plates for said roller, and screws passing through said slots for allowing the adjustment of either one or both of said plates, substantially as set forth.

15. The rocking frame I, in combination with the cord drawn forward thereby, the weight at the other end of said cord, and the shaft which is rotated in opposite directions by said frame and weight, said shaft having recesses in its ends for forming the heads of cigars, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

JAMES PRANGLEY.

Witnesses:

ALLAN A. HERR,
IRA H. HERR.