

(No Model.)

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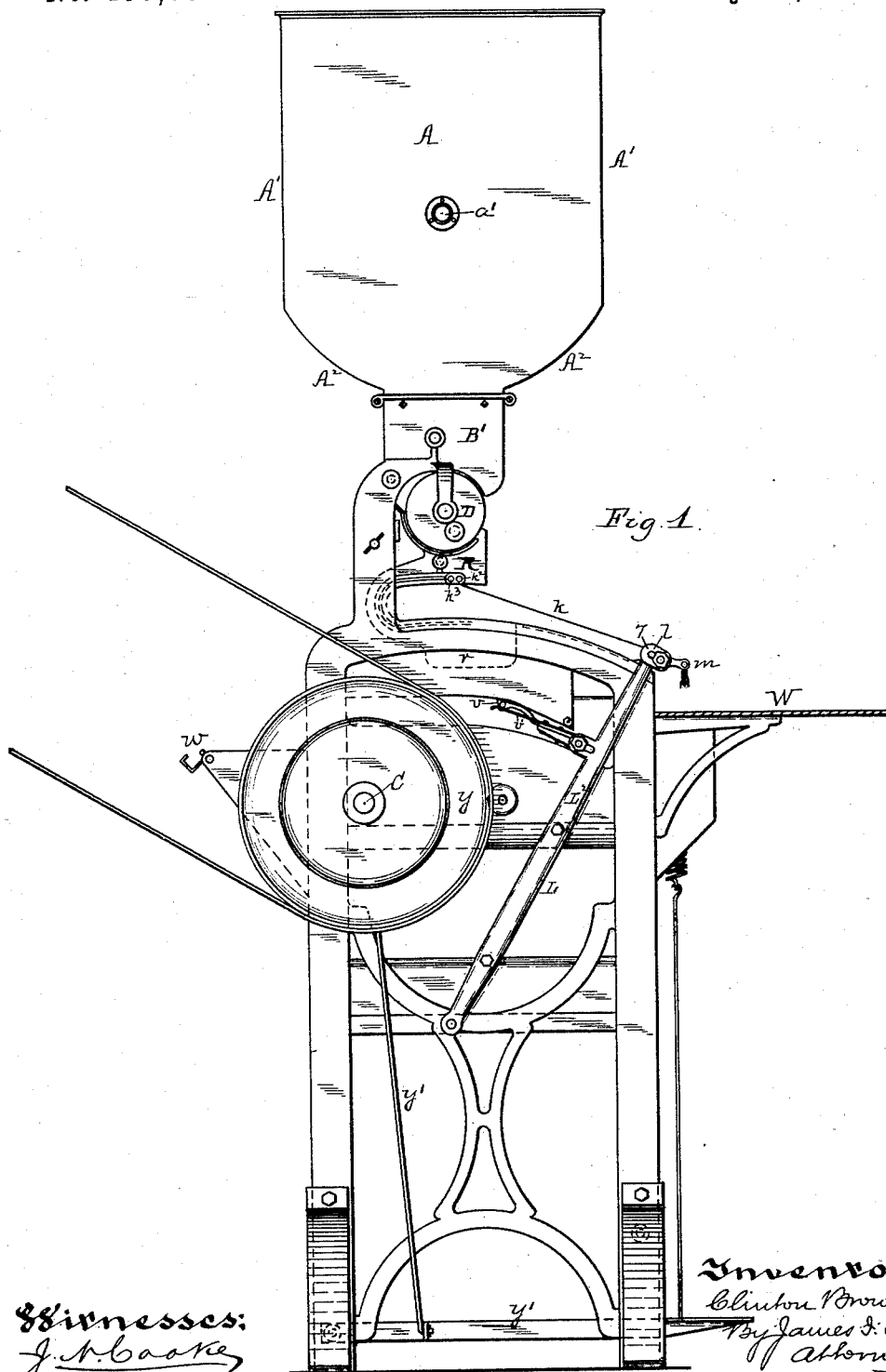
C. BROWNING, Dec'd.

F. BROWNING, Administrator.

CIGAR BUNCHING MACHINE.

No. 456,691.

Patented July 28, 1891.



*Witnesses:*  
*J. R. Baake*  
*Robt. D. Follen*

*Inventor,*  
*Clinton Browning*  
*By James D. Hall*  
*Attorney*

(No Model.)

6 Sheets—Sheet 2.

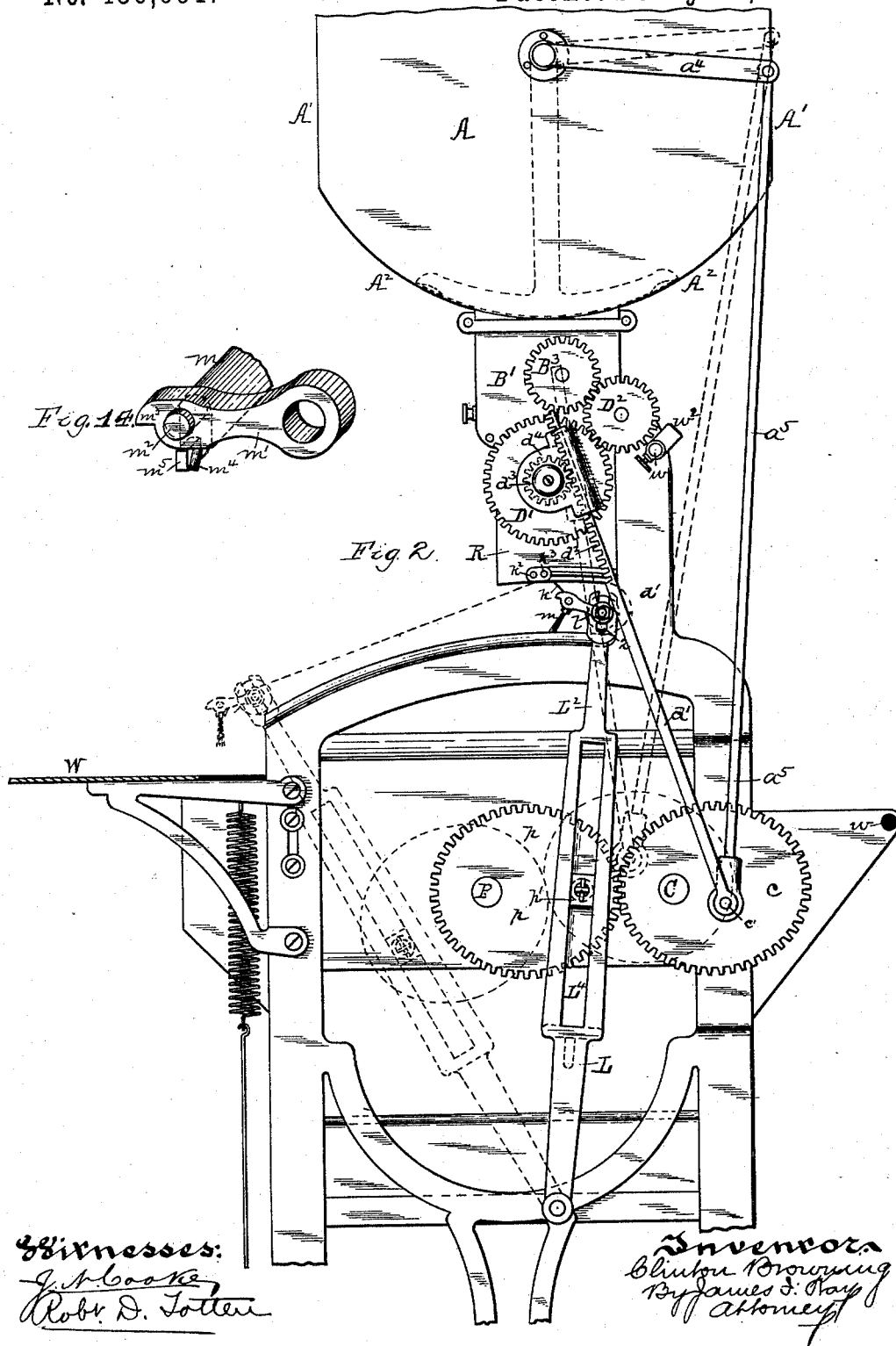
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6 Sheets—Sheet 3.

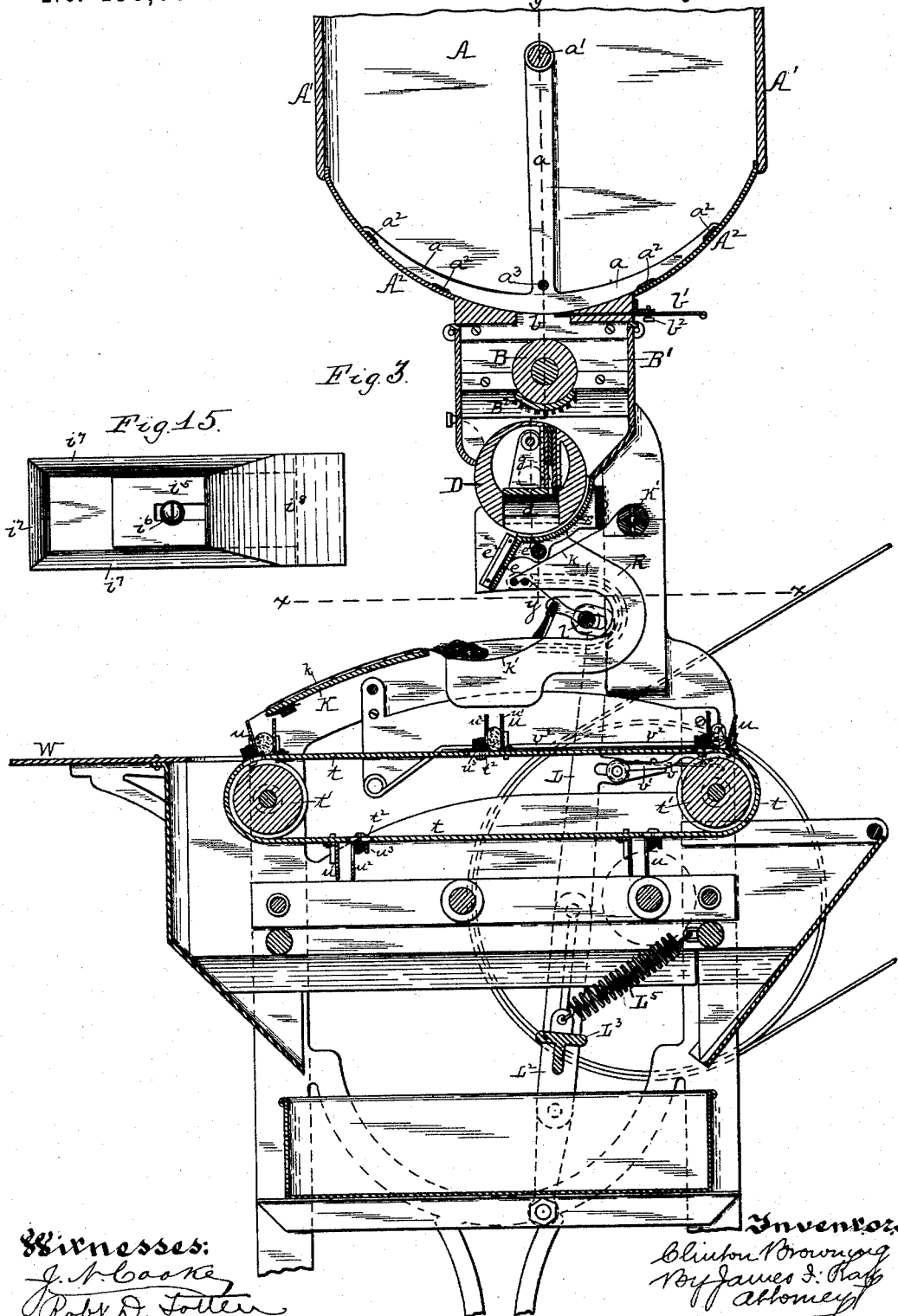
C. BROWNING, Dec'd.

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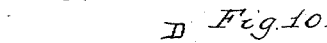
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6 Sheets—Sheet 4.

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No. 456,691.

Patented July 28, 1891.



88irnesses:  
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(No Model.)

6 Sheets—Sheet 5.

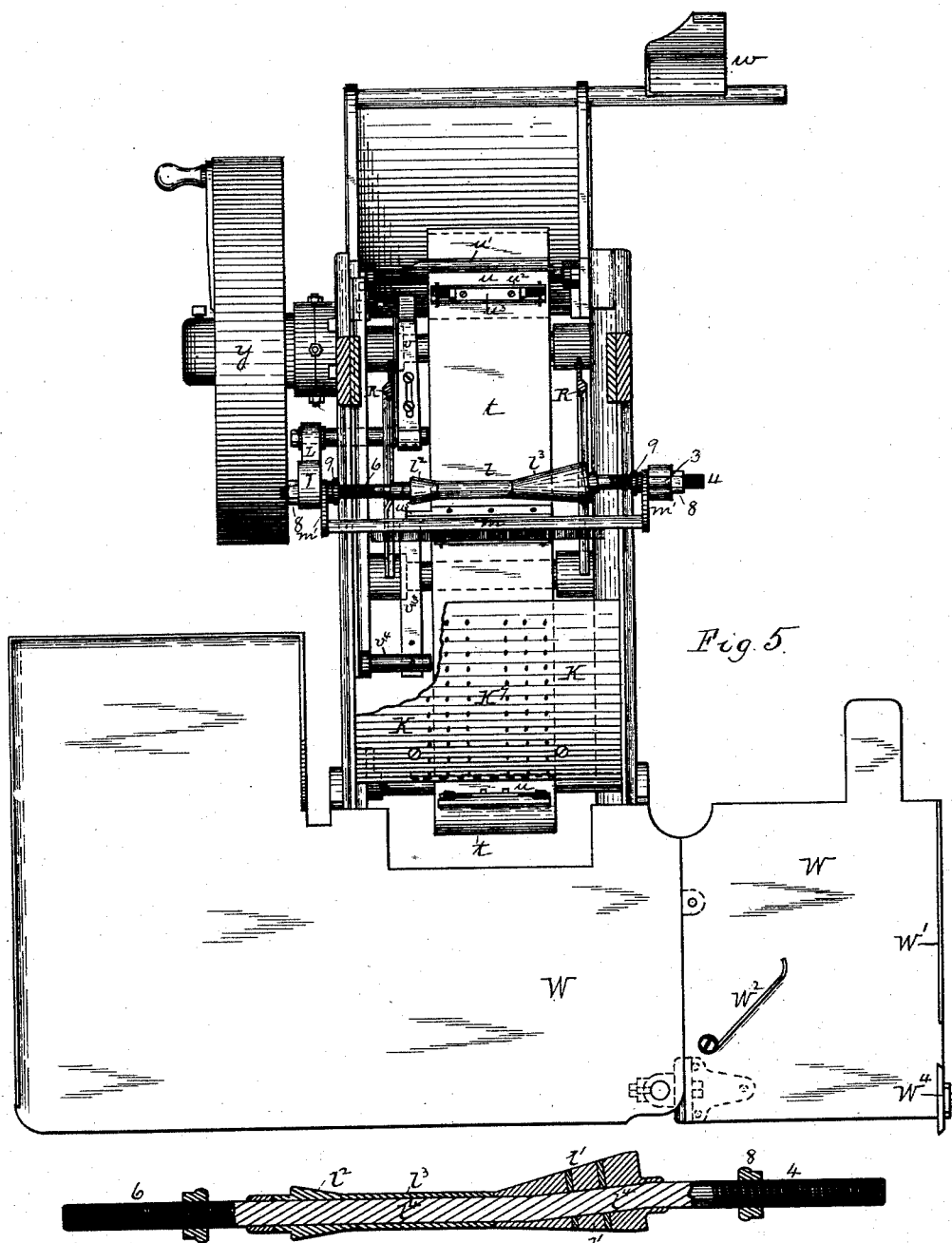
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### CIGAR BUNCHING MACHINE.

No. 456,691.

Patented July 28, 1891.



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6 Sheets—Sheet 6.

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No. 456,691.

Patented July 28, 1891.

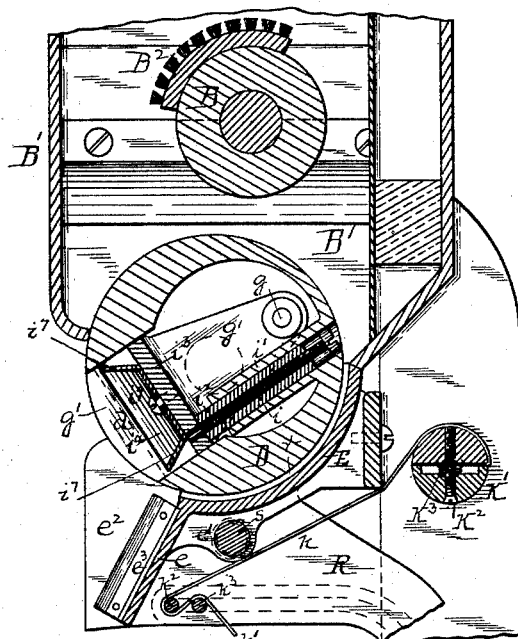


Fig. 7.

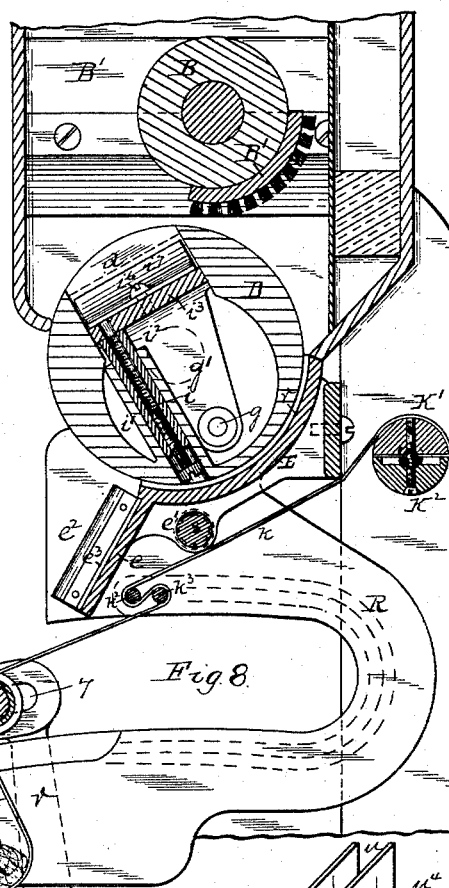


Fig. 8

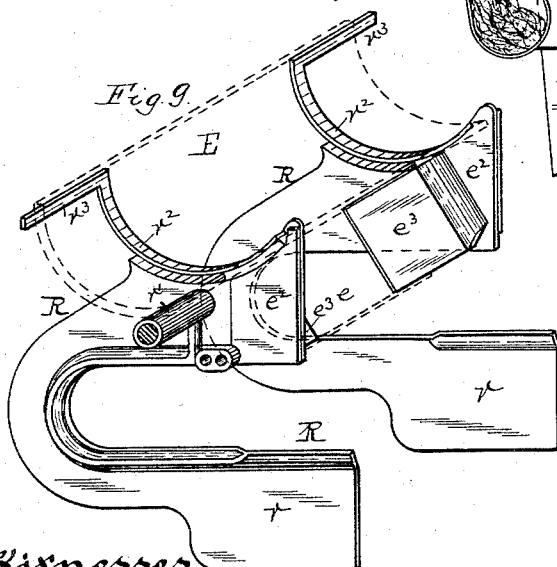


Fig. 9.

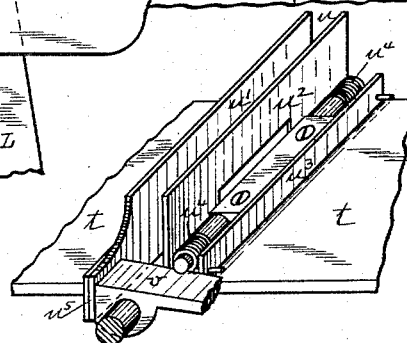


Fig. 13.

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# UNITED STATES PATENT OFFICE.

CLINTON BROWNING, OF SHOUSTOWN, PENNSYLVANIA; FRANK BROWNING  
ADMINISTRATOR OF SAID CLINTON BROWNING, DECEASED.

## CIGAR-BUNCHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 456,691, dated July 28, 1891.

Application filed June 7, 1889. Serial No. 313,425. (No model.)

*To all whom it may concern:*

Be it known that I, CLINTON BROWNING, a resident of Shoustown, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Cigar-Bunching Machines; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to the bunching of cigars and to the wrapping of the filler so as to prepare the cigar for the subsequent wrapping in the outer leaf of tobacco, its object being to improve this class of machinery in different particulars.

In the class of machines heretofore in general use it has been found that there was liability of the breaking up of the filler in feeding it to the machine for measuring and wrapping the same. Difficulty was also experienced in adjusting the machine according to the different sizes of cigars to be made, and it was found that the filler was delivered upon the wrapping-cloth in such position that there was liability of carrying part of the filler over and not properly wrapping it within the wrapping-leaf or binder, so that as perfect a cigar form as was desired was not obtained. It was also found that the wrapping-cloth at the end of the cigar, where it was desired to form it smaller, was very liable to be gathered in a fold and so form an imperfect cigar.

The object of my invention is to overcome these difficulties, as well as to improve the machine in certain other particulars, all of which will be hereinafter fully described; and to these ends my invention consists in certain improvements relative to the feeding of the cigar-filler from the hopper to the measuring apparatus; the adjustment of the amount to be fed to the measuring apparatus; the adjustment of the measuring pocket or receiver according to the size and amount of filler in the cigar; the construction of the reciprocating arm, which imparts the desired motion to the wrapping-cloth, and of the mechanism to regulate the speed thereof, so that a comparatively slow motion is imparted to the arm during the wrapping operation, but a very quick return is obtained, and therefore the speed of the machine may be

increased; the construction of the wrapping-bar secured to said wrapping-arm, so that it serves to take up all of the slack of the wrapping-cloth and provides for the formation of the small end of the cigar, and other improvements, all of which will be referred to hereinafter.

To enable others skilled in the art to make and use my invention, I will describe the same more fully, referring to the accompanying drawings, in which—

Figure 1 is a side view of my improved cigar-bunching machine. Fig. 2 is a view of the opposite side of the machine. Fig. 3 is a longitudinal central section of the machine. Fig. 4 is a back view. Fig. 5 is a horizontal section on the line *x x*, Fig. 3. Fig. 6 is a longitudinal cross-section on the line *y y*, Fig. 3. Figs. 7 and 8 are enlarged longitudinal central sections of the different positions of the brushing-wheel and measuring-wheel. Fig. 9 is a perspective view of the frames of the chute. Fig. 10 is a plan view of the measuring-pocket of the measuring-roll. Fig. 11 is a longitudinal section of the same. Fig. 12 is a longitudinal section of the bunching-roller. Fig. 13 is an enlarged view of the traveling belt and means of pushing it forward. Fig. 14 is a perspective view of the arm for supporting the brush, and Fig. 15 is a plan view of another form of the measuring-pocket.

Like letters and figures of reference indicate like parts in each.

At the upper end of the machine is the hopper in which the tobacco filler or scrap is placed to be fed to the machine. It has been customary in hoppers of this kind to provide devices for stirring up the filler and causing it to pass down to the measuring apparatus; but such devices are found to shake out the fine portions of the filler, bringing them to the lower part, while the larger portions, which are lighter in proportion to the space occupied, are fed more slowly to the measuring apparatus, and consequently there is not the even bunching desired. To overcome this I have arranged my hopper A with perpendicular side walls A' and a semicircular base A<sup>2</sup> and have placed within the hopper the oscillating frame *a*, pivoted on the shaft *a'*,

forming the center from which said semicircular base is drawn, the oscillating frame  $a$  conforming in shape to said base and carrying two or more flat cross-pieces  $a^2$ , which fit  
 5 closely against the semicircular base  $A^2$  and have beveled edges moving close to the surface of said base, and so act, without stirring up the filler, to push it over toward the center of the machine by traversing over the inner face of the base  $A^2$ , feeding means being  
 10 thus provided which will prevent the arching of the filler within the hopper and at the same time will provide for the feeding of the material through the opening  $b$  into the  
 15 measuring-case  $B'$  without stirring it up, and so sifting the smaller portions through the larger portions, as above set forth. The oscillating movement of the frame  $a$  within the hopper  $A$  is obtained by an arm  $a^4$ , attached  
 20 to the shaft  $a'$ , where it extends outside of the hopper, and by a rod  $a^5$ , connected to the pin of the wheel  $c$ , which is secured to the main driving-shaft  $C$ .

Below the hopper  $A$  is the case  $B'$  of the  
 25 measuring apparatus, an opening  $b$  in the base of the hopper communicating therewith, and the frame  $a$  has above said opening a cross-bar  $a^3$ , which is raised slightly above the base of the frame, so that as the frame oscillates over the opening  $b$  this cross-bar will  
 30 act to push the filler into said opening and provide for the passage of the filler into the measuring-case. The size of the opening  $b$  is regulated by the sliding plate  $b'$ , which extends inwardly from the rear of the machine  
 35 and has the adjusting-screw  $b^2$  for holding it in place, said sliding plate or valve so enabling me to regulate the amount of material fed into the measuring-case, and while preventing the material being packed too tightly therein yet insuring the delivery of the proper  
 40 amount into the measuring apparatus.

The measuring apparatus consists, generally stated, of the case  $B'$ , at the base of which  
 45 is the measuring-wheel  $D$ , containing the adjusting apparatus for regulating the amount of filler to be delivered, and a brushing-wheel  $B$  above this measuring-wheel and between it and the feeding-opening  $b$  of the hopper.  
 50 The brushing-wheel has a reciprocal rotation at about twice the speed of the measuring-wheel  $D$ , and it has a segmental brush  $B^2$  formed thereon, which acts to brush the filler into the measuring space or pocket  $d$  of the  
 55 measuring-wheel and to even off the amount of filler contained in said measuring-space, so as to regulate the amount delivered therefrom to the delivery-chute  $e$ . The brushing-wheel  $B$  has a peculiar movement, which can be  
 60 more easily understood from the detail views, Figs. 7 and 8, the movements of the measuring-wheel  $D$  with relation thereto being also illustrated in the same figure. The measuring-wheel  $D$  has a movement of about a two-  
 65 thirds revolution, it passing within the measuring-case  $B'$  to the position shown in Fig. 8, so that its measuring-space  $d$  is carried be-

yond or in front of the axis of the two wheels and to the upper part of the measuring-wheel, and the wheel then turns back to the rear of  
 70 the machine, its measuring-space passing first within the case  $B'$  and then within the chute-casing  $E$ , forming the base of the measuring-case, until its rear end reaches the edge of the delivery-chute  $e$ , so as to deliver all of the  
 75 filler contained within the measuring-space  $d$  down said delivery-chute  $e$  and upon the wrapping-cloth  $k$ . When the measuring-space  $d$  of the wheel  $D$  reaches its farthest point of movement within the case  $B$ , the  
 80 brush  $B^2$  is situated just back of such measuring-space, and as soon as the measuring-wheel turns in the opposite direction this brush  $B^2$  passes over said measuring-space with a stroke about twice the speed of the  
 85 measuring-wheel and in the opposite direction to its movement, so brushing over its pocket and evening off the filler therein. The brushing-wheel turns about a revolution and a half, turning in that direction until the  
 90 direction of movement of the measuring-wheel  $D$  is reversed, when the movement of the brushing-wheel is also reversed, its surface always traveling in the opposite direction to that of the measuring-wheel. The  
 95 measuring-wheel passes downwardly, carrying the tobacco within the pocket  $d$  around, so that said pocket is closed by the chute-case  $E$ , and finally delivering it through the chute  $e$  onto the wrapping-cloth, and as the wheel  
 100  $D$  then turns in the opposite direction and the space  $d$  again comes to the upper part of the wheel the brush  $B^2$  of the brushing-wheel  $B$  again passes over the space and brushes the filler into the same, the measuring-wheel  
 105 then reaching the limit of its motion, and on its repetition of the above stroke the brush of the wheel  $B$  again passes over the space  $d$  and acts to brush it off and even the amount of filler contained therein, as above described.  
 110 The brushing-wheel therefore not only acts to even off the filler within the pocket  $d$ ; but as it rotates within the measuring-case  $B'$  the segmental brush which extends out therefrom carries the filler around, and as said brush  
 115 passes over the filling-pocket acts to brush the filler into said pocket and arrange for the proper and even filling thereof. The motion of these two wheels is obtained from the wheel  
 120  $c$  on the main shaft  $C$ , said shaft having the crank-pin  $c'$ , on which is journaled not only the bar  $a^5$ , above referred to, but the rack-bar  $d'$ . The rack-face  $d^2$  of said bar engages with the pinion  $d^3$  on the shaft of the wheel  $D$ , being held in engagement therewith by a sleeve  $d^4$ , journaled  
 125 on said shaft and having a guideway for the movement of the rack-bar, so that as the wheel  $c$  is rotated through the crank-pin  $c'$  a reciprocating motion is imparted to the rack-bar  $d'$ , which by its reciprocating  
 130 motion operates the measuring-wheel  $D$  in the manner above described, imparting about a two-thirds revolution thereto on each stroke of the rack-bar.



In order to impart the desired motion to the brushing-wheel, I secure to the shaft carrying the measuring-roll D the pinion D', which engages with the idle-pinion D<sup>2</sup> and through it rotates the pinion B<sup>3</sup>, secured to the shaft of the brushing-wheel B. The pinion D' is about twice the diameter of the pinion B<sup>3</sup>, and therefore causes said pinion and the brushing-roll operated thereby to rotate about twice as fast as the measuring-roll D, or one and one-half time upon each stroke of the rack-bar d'. The measuring-roll D is arranged so that the measuring-pocket d thereof can be adjusted in any desired way, according to the length of the cigar to be made, the shape of the cigar, and the amount of tobacco or filler to be employed therewith. For the purpose of adjusting it as to the length thereof I form the measuring-wheel hollow, as shown, said wheel having the journals d<sup>3</sup> formed with the hollow wheel, and extending through the wheel is the shaft g, having the right-hand thread at one end and a left-hand thread at the other end, while screwing on said threaded portions are the end adjusting-plates g', which have the wings g<sup>2</sup>, moving in guides in the end portions of the wheel D, these end adjusting-plates g' being thus held in place by the screw g and the guides on the edges of the wheel D. The screw g is turned by a suitable thumb-nut g<sup>3</sup> and by its movement draws the end adjusting-plates g' toward or from each other, so regulating the length of the cigar, and, if desired, a suitable indicating-mark is made on the measuring-wheel D, as shown in Fig. 10, to indicate the length of the cigar. The depth of the measuring-pocket d may also be regulated by means of the screw i, the hollow measuring-wheel having a sleeve or hollow stud i' cast therein, within which fits the extension i<sup>2</sup> of the plate i<sup>3</sup>, said extension i<sup>2</sup> being internally threaded and the screw i screwing into the threaded extension i<sup>2</sup>. The head of the screw i is held by any suitable pin or like device engaging with an annular groove therein, so preventing the longitudinal movement of the screw, and the turning of the screw causes the advancement or retraction of the plate i<sup>3</sup>, and so adjusts the depth of the measuring-pocket. As, however, the length of that pocket is formed adjustable, as above described, it is necessary to form the base of the pocket adjustable lengthwise, and to accomplish this, as well as to measure approximately the proper amount of filler for the different parts of the cigar, I secure to the plate i<sup>3</sup> the base-plates i<sup>4</sup> i<sup>5</sup>, these plates having slots therein through which the screw i<sup>6</sup> passes, so that they can be adjusted longitudinally to suit the length of the measuring-space d. In order to impart approximately the desired shape to the cigar, the plates i<sup>4</sup> and i<sup>5</sup> are made of peculiar shape, as shown in Figs. 6 and 10, the plate i<sup>4</sup> having a flange extending out therefrom around one end and the side portions thereof, as at i<sup>7</sup>, the said flanges extending out at an ob-

tuse angle from the plate, and the plate i<sup>5</sup> having the inclined portion i<sup>8</sup>, extending nearly up to the edge of the filling-space d, and so reducing the depth of the portion of the pocket which receives the tobacco for forming the mouth portion of the cigar, said plate i<sup>5</sup> being formed increasing in width, so that as it fits between the flanges i<sup>7</sup> it will form the complete base to the pocket d, this increased width being shown at i<sup>9</sup>.

The measuring-roll D has openings formed therein on the side opposite to the measuring-pocket d or in the ends of the roll, as at d<sup>6</sup>, to permit of the escape of any small particles of tobacco which might pack within the hollow portion of the measuring-roll, and so prevent the operation of the adjusting devices therein. As it may be found desirable to turn the measuring-roll D beyond the limit of its ordinary reciprocating motion, so as to provide for the more easy adjustment of the devices for regulating the size of the measuring-pocket d, instead of securing the pinion D' firmly to the journals d<sup>3</sup> of the roll, said pinion is simply mounted therein and the two are held in engagement by the spring-operated pin d<sup>7</sup>, fitting into a seat d<sup>8</sup> in the journal d<sup>3</sup>, and in case it is desired to turn the roll D beyond the limit of its motion all that is necessary is to withdraw this pin d<sup>7</sup>, which leaves the roll free to turn.

As before stated, the base E of the measuring-case B' is formed corresponding in shape to the measuring-roll D, so as to hold the filler within the pocket d, this base terminating in the chute e, which delivers the filler onto the bunching-cloth k. The bunching-cloth extends over the rolling-plate K, being secured at the front end thereof, and then extending backwardly, so as to droop over the rear end of said plate, as at k', and form the depressed portion or pocket to receive the filler from the chute e, and then extending back in the manner hereinafter described, and being secured to the holder K'. This holder is formed of a split roll which is held in a suitable seat and turning therein so as to adjust the proper length of cloth, and being held by a suitable set-screw. As it is desirable to change the cloth according to the different lengths of cigars made, this roll K' is formed as shown in Figs. 4 and 7, being divided into two halves secured together by screws K<sup>2</sup>, around which are placed springs K<sup>3</sup>, and in order to secure the cloth in place these screws are loosened, whereupon the springs press apart the two halves of the roll, and the cloth is inserted between them and the two halves then drawn together by the screws so catching and holding the cloth. The upper surface of the rolling-table K forms an arc from the pivotal point of the frame L, and its surface is roughened, as at K', having a series of small rasp-like projections extending up from its face to prevent the slipping of the bunching-cloth during the rolling operation.

Secured to the body or main frame of the

machine, near the base thereof, is the bunching-roller frame L, which is operated in the manner hereinafter described, and carries at its upper end the bunching-roller *l*, which is carried over the rolling-table K, the roller itself being back of the bunching-cloth, so that when the filler is dropped into the bunching-cloth in the pocket or depressed portion *k'* the bunching-roller *l* will carry the cloth over, so as to inclose this filler, and will then force the cloth in a rolling action across the rolling-table K, on which the binder has been placed, and by its rolling action will cause the binder to be rolled around the filler, so forming the bunched cigar ready for the wrapper.

The bunching-frame L carries in front of the roller *l* the smoother or brush *m*, which is placed in front of the bunching-cloth *k*, the bunching-cloth passing upwardly from the pocket *k'*, formed therein, when in position to receive the filler from the chute between the bunching-roller *l* and this brush *m*, and the brush acting to smooth out the binder, so that it will wrap the more easily around the filler, kinks or like inequalities being smoothed out as the cigar is bunched, and the binder thus laid smoothly over part of the bunching-cloth on the rolling-table, so that a more perfect wrapping of the binder around the filler is obtained.

As it is desirable that the bunching-cloth shall be free to drop as nearly vertical at the rear end of the pocket *k'* as possible, and that it will not rest upon the bunching-roller, I carry the cloth from the roll *K'*, above referred to, forward under the base E of the measuring-case, above a bar *k<sup>2</sup>*, then around that bar and up between it and a bar *k<sup>3</sup>* back of it, and over said bar *k<sup>3</sup>*, so that the natural fall of the bunching-cloth is backward or toward the rear of the machine, and as it is carried between the bunching-roller and brush it will naturally drop between the same, as shown, while, as it is by the above arrangement thrown in the backward direction, it will draw the fore part of the pocket or droop *k'* into a more inclined position, and therefore cause the gathering of the filler at the front part of the droop, so that when the rear part of the droop or pocket formed in the bunching-cloth is carried over the roller-table by the pressure of the bunching-roll it will naturally gather in all of the filler and gather in a bunch before it is carried onto the rolling-table. For the same reason it only requires that the binder be laid upon the part of the bunching-cloth lying upon the rolling-table, and the natural action of bunching the cigar will first cause the gathering of the bunch and then the carrying of that bunch over the rolling-table and the wrapping of the binder around the same.

In order to prevent the kinking and lapping of the bunching-cloth, such as the part forming the mouth part of the cigar, and, if desired, the other end thereof, and to arrange for imparting the proper shape to the mouth

of the cigar, I have constructed the bunching-roll as follows: The front or forward edge of the roll is practically straight, or nearly so, so that it naturally gathers the bunch properly; but the roll is of irregular shape, as clearly shown in the several figures, having the enlarged portion *l'*, which extends with a gradually-increasing diameter to the end of the roll forming the mouth end of the cigar, this increase in diameter being formed, however, at the back part of the roll, and thus permitting the front face thereof to be formed in substantially the same line as the rest of the roll, while this increased diameter at this end of the roll acts to take up the bunching-cloth, as it requires a greater portion thereof to wrap around the enlargement, and consequently reduces the size of the bunching-cloth inclosing the mouth portion of the cigar-bunch, and therefore this enlarged head *l'* prevents the kinking or the lapping of the belt during the bunching operation. The same construction may be employed to form the other end of the cigar, such as the enlarged head *l<sup>2</sup>*, if it is desired to reduce the diameter in that part, and that enlarged head may also be made stationary and thrown to one side, so that the base-line of the roll is practically straight, as above set forth. In order to prevent friction, however, and as that part of the head of the cigar is not so much reduced in size, I generally form this enlargement *l<sup>2</sup>* with the straight portion *l<sup>3</sup>*, forming the body of the bunching-roller, in the form of a sleeve, as shown by the section of the roller, this sleeve turning on the central shaft *l<sup>4</sup>* of the roller, and so overcoming friction and enabling the machine to work more easily. The bunching-roller is secured in the upper ends of the reciprocating frame in such manner that it may be adjusted in any desired or necessary direction. The end of the frame L nearest the mouth-piece has the vertical slot 2 therein, in which a block 3 fits, said block sliding over the end of the bunching-roll, which is screw-threaded for the purpose hereinafter described, and to hold that end from turning the teeth on one side of the threaded portion 4 are planed off, so that the block 3, in fitting over the threaded end 4, holds the roll from turning. This block 3 provides for the vertical adjustment of that end of the roll in the bunching-frame. The other end of the bunching-roller is also threaded, as at 6, and extends through a horizontal slot 7 in the opposite arm of the bunching-frame L, so providing for the horizontal adjustment of the roll, as may be found desirable. Nuts 8 and threaded washers 9 screw on the threaded ends of the roll, the washers fitting against the inner sides and the nuts against the outer sides of the arms, and so provide for holding the roller in the desired position by clamping against the arms of the bunching-frame. The brush *m* is carried by arms *m'*, fitting around the threaded portions 4 and 6 of the roll and against threaded washers 9, these arms being clamped between said

washers and the inner faces of the arms of the bunching-frame, and the brush having pins or journals  $m^2$  at the ends fitting in bearings at the ends of the arms  $m'$ , and so providing for the swinging of the brush in said supporting-arms. The swinging movement of the brush is, however, limited by the stops  $m^3 m^4$  on one of the arms  $m'$  and by the projecting lug  $m^5$  on that end of the brush, such devices therefore providing for the adjustment of the brush the proper height above the roller-table K and the proper pressure of the brush upon the binder placed on the bunching-cloth as the brush travels over the table, as well as the proper inclination of the brush in traveling over the table, the projecting lug  $m^5$  resting against the lower stop  $m^4$  to hold it at that inclination. The brush is, however, free to swing between said stop  $m^4$  and the upper stop  $m^3$  on the arm  $m'$ , and this permits the brush to rise out of the way, so that it will travel more easily over the finished cigar-bunch, as well as over the rolling-table and bunching-cloth, on the return-stroke of the bunching-frame when it is being carried back for another bunching-stroke.

By the term "brush" I include any like smoothing device, such as a plate or strip, flexible or otherwise.

The bunching-frame L is pivoted to the body of the machines, as above set forth, the frame having the two side arms  $L^2$ , which are pivoted in this manner on each side of the machine-body, and the proper rigidity being imparted to the frame by the cross-brace  $L^3$ .

In order to perform the work rapidly and at the same time have a slow stroke during the bunching operation, so that the filler resting in the pocket or droop is not gathered with such a quick motion as to spread or scatter it, it is desirable that the reciprocating bunching-frame shall have a forward movement which is comparatively slow, and also have a return or backward movement which is quite rapid. This is obtained by a peculiar construction of gearing, as hereinafter described. The main shaft C carries the wheel  $c$ , and this wheel is what is termed an "eccentric gear-wheel"—that is, the wheel has a gear-face and is secured to the main shaft C at a point at one side of the center thereof. This wheel gears with a like gear-wheel  $p$ , secured to a shaft P, journaled in the machine-body, the wheel  $p$  being also an eccentric gear-wheel and secured to the shaft P at a point at one side of its center. The operation of these two gear-wheels is such that upon the rotation of the wheel  $c$ , though the two wheels always remain in the gear, the motion imparted to the wheel  $p$  varies in speed according to the distances of the face of the wheels from their centers—that is to say, when the part of the gear-face of the wheel  $c$  which is closest to its shaft C engages with the wheel  $p$  it engages with the portion of the wheel  $p$  which is at the greatest distance from its shaft P. This of course gradually changes

as the two wheels turn, so that when the part of the gear-face of the wheel  $c$  farthest from its shaft C is in engagement with the wheel  $p$  it engages with the part thereof nearest to its shaft P, and consequently the speed of the wheel  $p$  varies according to the distances of the faces in engagement from their respective shafts. The wheel  $p$  carries a crank-pin  $p'$ , fitting within a slot  $L^4$  in the arm  $L'$  of the bunching-frame, and this crank-pin is formed on the part of the wheel  $p$  farthest from the shaft P, so that the bunching-frame takes the movement of that part of the wheel  $p$ , and consequently its movement is varied according to the varying speeds of the wheel  $p$ , the bunching-frame having a rapid movement when the part of the wheel  $c$  farthest from center engages with the wheel  $p$  nearest its center, and a slow movement when the part of the wheel  $c$  nearest its center engages with the part of the wheel  $p$  farthest from its center, this being indicated on the drawings by the dotted lines showing the different positions of the two wheels. The speed of the bunching-frame is also further varied by the direction of rotation of the wheel  $p$ , carrying it, and the position of the crank-pin  $p'$  in the slot  $L^4$  of the frame L. The wheel  $p$  rotates from right to left, and its crank-pin is in the upper part of the slot  $L^4$  while it is forcing the frame L forward during the bunching operation, and as the crank-pin is then in the part of the slot farthest from the point of pivoting of the frame L it imparts a slower movement to the frame, while on the return-stroke this crank-pin passes downwardly to the base of the slot  $L^4$ , and therefore imparts the movement to the frame at a point nearer its pivotal point, and imparts a greater movement thereto in proportion to the travel of the wheel, and for this reason increases the speed on the back-stroke of the frame L. It is to be noted, further, that the frame L is pivoted at a point back of the shaft P, and this also acts to vary the speed of the frame L, as during the forward or bunching stroke of the frame it is moved from practically a vertical line to an inclined position while the crank-pin is in the upper part of the slot farthest from the pivotal point of the frame, and therefore a slower motion is obtained, and when the crank-pin is in the lower part of the slot and nearest the pivotal point it draws this frame from its inclined position backwardly to its vertical position, and therefore its speed is increased on account of the relative positions of the frame and the wheel and its crank-pin, the speed being in this way still further increased in the back-stroke, as the bunching-frame moves, as above stated, from a practically vertical position to a forward-inclined position, and in this movement the weight of the bunching-frame would act to some extent as a dead-weight. To overcome this dead-weight, I secure to the cross-bar  $L^3$  of the bunching-frame and to the machine-body, back of the bunching-frame, the spiral spring  $L^5$ , and this spring is ex-

panded during the forward movement of the frame and acts on the back-stroke to lift the frame and carry it back to its substantially vertical position, so overcoming the weight thereof. The length of stroke of the bunching-frame L and the bunching-roller  $l$  can be varied, as desired, as the crank  $p'$ , moving in the slot  $L^4$ , is itself secured in a radial slot in the wheel  $p$ , and its distance from its shaft P can be changed, as desired.

It has before been noted that the pocket of the measuring-wheel can be adjusted according to the desired length of the cigar, and as the chute  $e$  is desired to confine the filler and deliver it in substantially the same length of bunch onto the bunching-cloth, and as it is desired to provide side walls for the pocket or droop  $k'$  of the bunching-cloth receiving the filler from the chute, I have employed the frames R, forming the sides of the chute and of the pocket or droop together, and provided mechanism for adjusting the same, and more clearly shown in Fig. 9. This mechanism is constructed as follows: The base of the chute  $e$  is formed with the curved base E of the measuring-case B', and this base E has secured thereto the bearings  $e' e'$ , in which is mounted a bar  $s$ , having right and left threads  $s^2 s^3$ , respectively, formed at the ends thereof and provided with a thumb-piece  $s'$  at one end. Engaging with these right and left threads  $s^2 s^3$  are threaded sockets  $r'$ , forming parts of the frames R, which frames extend out on each side of the chute  $e$ , forming side walls  $e^2$  thereof, and then extend backwardly to permit of the entrance of the bunching-roller in its stroke, and then forwardly under the course of the bunching-roller to form the sides  $r$  of the pocket or droop  $k'$  in the bunching-cloth. Secured to the sides  $e^2$  of the chute  $e$  are the plates  $e^3$ , which fit over the base of the chute  $e$  and form therewith the base when the frames R are drawn apart by the turning of the shaft  $s$ . As the curved base E of the measuring-case does not fit closely to the measuring-roll and it is desirable to adjust the width of the space between them, the frames R are also provided with curved extensions  $r^2$ , fitting between the roll and this curved base, these extensions conforming in shape to the space between the roll and the base E and acting to vary the width of that space according as the width of the chute  $e$  is varied, and as some of the filler might escape from the case B' when these extensions  $r^2$  are drawn near together, as when making short cigars, I form at the ends of the curved extensions  $r^2$  the horizontal bars  $r^3$ , which act to close this space beyond said extensions between the roll D and the base E of the case B'. These frames R therefore provide means for adjusting the width of the chute  $e$ , the width of the pocket  $k'$ , formed by the droop of the bunching-cloth, and the width of the space between the curved base E and the measuring-roll.

As it is of course necessary to employ dif-

ferent widths of bunching-cloth, according to the width of the cigar, the bunching-cloth may of course be changed when necessary by disengaging it from the forward end of the roller-plate and from the roll K', as above described.

The machine is arranged so as to be worked by one or two operators, as desired, two operators being preferably employed, as it can be run at practically twice the speed, one operator feeding the binders to the machine and the other taking the bunch and wrapped cigar-bunch therefrom. Where but one operator is employed, a holder is provided at the base of the rolling-table, onto which the binding-cloth delivers the wrapped cigar-bunch, and the board to receive the bunch is placed at the front of the machine on the platform W, being held in place against a rib W' by a spring W<sup>2</sup>. The operator then performs the double work of placing the binder on the rolling-table and placing the wrapped bunch in the receiving-board. When so operated, in order to trim the ends of the cigar-bunches a knife W<sup>4</sup> is arranged at the edge of the platform W, and when the mold is filled with bunches it is withdrawn down so that its edge travels along this knife, and the knife trims the edges off the bunches.

When the machine is arranged for two operators, I provide a traveling belt to carry the wrapped bunch to the rear of the machine, so that the other operator can there withdraw it from the machine and place it in the receiving-mold, which is in that case held by the seat  $w$  and arm  $w'$ , extending out from the machine and held in place by a lug  $w^2$ , sliding in said arm and clamped thereto by a set-screw. This traveling belt  $t$  is formed of leather or like flexible material, and is mounted on the pulleys  $t'$ , one at the forward end of the rolling-plate K and the other at the rear of the machine, and it has secured at intervals thereon the carriers  $u$ . These carriers are each formed of a plate  $u'$ , which is rigidly riveted to the belt  $t$  and stands at a right angle thereto, and a plate  $u^2$ , which is mounted in a holder  $u^3$ , bolted in slots  $t^2$ , cut in the belt  $t$ , springs  $u^4$  acting to press and hold the plate  $u^2$  in a position at right angles to the belt, but permit the plate to yield slightly, if necessary. When these carriers are passing around the pulleys  $t'$  at the forward end of the rolling-plate, where they receive the wrapped bunch from the bunch-cloth  $k$ , and at the rear of the machine, where the bunches are withdrawn from the carriers, on account of the bending of the belt, the plates  $u' u^2$  are drawn apart, so that the carriers open to receive the bunch or permit of its withdrawal. When the belt is drawn straight, however, the plates are drawn toward each other and so bind upon the wrapped bunch and prevent the loosening of the wrapper, though the pressure is regulated by the spring-actuated plate  $u^2$ , and the crushing of the wrapped bunch is prevented. The

space between the plates  $u'$  and  $u''$  can be regulated by adjusting the holder  $u^3$  in the slots  $f^2$ .

Motion may be imparted to the belt  $t$  in any desired manner. As, however, it is desired  
 5 that a carrier is held in position to receive the bunch when delivered from the cloth, I take advantage of the return movement of the frame  $L$  to move the belt. The frame has  
 10 secured to it the spring-pawl  $v$ , and the plates  $u'$  of the carrier extend out beyond the side of the belt-forming lips  $u^5$ , against which the pawl  $v$  strikes, and by which it carries the belt the length of the stroke of the frame at that distance from the center thereof. The  
 15 pawl  $v$  is pressed up by its spring  $v'$  against the horizontal guide-plate  $v^2$ , which causes its forward end to travel in a practically horizontal course and holds it in contact with the lip  $u^5$ . On its return-stroke the pawl passes  
 20 under the lip  $u^5$  of the next carrier and springs up in position to engage therewith on the next return-stroke of the frame. When but one operator is employed on the machine, the belt is not moved, and one of the carriers is  
 25 held in position to receive the bunch from the bunching-cloth. To prevent the pawl  $v$  from engaging with the carriers, I employ the plate  $v^3$ , which passes through a slot in the lug  $v^4$ , extending out from the machine-body,  
 30 and which may be drawn through said slot into such position that the pawl  $v$  passes under it on the forward movement of the frame  $L$  and is depressed thereby, so that it does not engage with the different carriers. Two  
 35 holes are shown in the plate  $v^3$ , and a pin passes through a like hole in the lug  $v^4$  and holds the plate in whichever position desired.

The shaft  $C$  may be connected to the driving-pulley  $y$  by any suitable clutch device operated by a treadle  $y'$ , so that the machine can be instantly started and stopped, as desired.

In forming a cigar-bunch in accordance with  
 45 my invention the tobacco filler or scrap is placed within the hopper  $A$ , and the oscillating frame  $a$  therein feeds the filler through the opening  $b$  without disturbing the filler to any great extent, so feeding both the large  
 50 and small portions of the scrap or filler into the measuring-case  $B'$ , the size of the opening  $b$  being so regulated that while the measuring-case is filled with tobacco it cannot be so packed therewith as to prevent the proper  
 55 operation of the measuring apparatus. The brushing-wheel  $B$  in its reciprocating action carries the tobacco down into the lower part of the case and brushes it into the pocket  $d$  of the measuring-roll  $D$ , which is carried to  
 60 its farthest distance within the measuring-case, while the brush  $B^2$  is passing in the opposite direction over the pocket  $d$ , and the brush therefore acts first to brush the tobacco into this pocket, and on the return movement  
 65 of the roll  $D$  the brush  $B^2$  in its return movement again passes over the pocket  $d$  to brush off any extra amount of filler contained there-

in, the action of the brush in connection with the measuring-case filling the pocket properly and insuring the carrying down of the proper  
 70 amount of filler thereby. As the measuring-roll turns in its stroke to deliver the tobacco, any extra tobacco is again cut off by the upper edge of the curved base  $E$  of the measuring-case, which acts as a cut-off for the pocket,  
 75 and as the roll  $D$  turns farther the curved base  $E$  retains the filler within the pocket until the pocket passes over the chute  $e$ , when the filler is discharged from the pocket and descends over the chute upon the bunching-  
 80 cloth  $k$ . This cloth receives the filler at the forward end of the pocket or droop  $k'$ , as shown in Fig. 3, the cloth being raised so as to receive the filler at the forward end of the pocket as it passes the back of the brush  $m$   
 85 and over the bars  $k^2 k^3$ , which by drawing the cloth backwardly hold the forward end thereof nearer a horizontal position, as above stated.

The binder is placed by the operator upon the rolling-table  $K$ , its edge preferably extending over into the pocket  $k'$ , so that the  
 90 filler will drop onto the forward edge thereof, though this is not necessary, as, on account of the movement of the brush  $m$  and the manner in which the bunch is gathered by the  
 95 movement of the bunching frame and roller, the tobacco is carried onto the binder and the binder rolled thereon without the necessity of placing it within the pocket  $k'$ , so that the filler will drop onto the binder. The bunch-  
 100 ing-frame  $L$  then advances, and as it does so the pocket  $k'$  droops still farther, while the filler which was deposited at the forward end of the pocket descends along the front part of the pocket or droop, leaving the back part  
 105 thereof free from any filler, so that the bunching-roll  $l$  can carry said back part over to the table  $K$  without carrying over any of the filler. On the further forward movement of the bunching-roll the back part of the pocket is drawn  
 110 upwardly, so gathering the filler in a bunch or roll and finally carrying such bunch onto the rolling-table. The difficulty of carrying the filler up with the cloth heretofore found is therefore overcome by holding the forward end of  
 115 the pocket nearer the horizontal line and depositing the filler in that part of the pocket, leaving the rear part free to swing over to the rolling-table. During the operation the brush passes over the filler, which is gathered in  
 120 a bunch by the bunching-cloth, and the brush smooths out the binder and holds it in proper position to be evenly wrapped around the bunch. By the movement of the bunching-roller  $l$  the filler is gathered within the bunch-  
 125 ing-cloth and the bunching-roller forces the cloth to travel over the rolling-table and compact the bunch and wrap the binder around the same, the enlarged portion  $l'$  of the roll gathering up the extra part of the bunching-  
 130 cloth forming the mouth portion of the cigar-bunch and so contracting this part of the space within the bunching-cloth and at the same time preventing the forming of any

wrinkles or laps in the bunching-cloth and imparting the gradually-increasing diameter to the bunch from the mouth portion toward the body of the cigar, wrapping the binder 5 evenly around the bunch and imparting the proper shape to the cigar-bunch. On account of the peculiar shape above described of the bunching-roll, I am thus enabled to impart the proper shape to the cigar-bunch and wrap 10 the binder around the same without fear of cutting the binder on account of laps or kinks in the bunching-cloth by taking up on an enlarged portion of the roll all the extra part of the bunching-cloth which might be liable to 15 cause such action. The cigar is delivered from the bunching-cloth into the carrier *u* on the traveling belt *t*, and on the return-stroke of the bunching-frame *L* this belt *t* is carried the proper distance to bring another 20 carrier at the end of the rolling-table *K* and in position to receive the next cigar-bunch formed and carry it back to the rear end of the machine. As the carrier receives the cigar when it rests upon the curved portion 25 of the wheel *t'*, supporting the belt, it is evident that the carrier is open so as to give full space to receive this cigar-bunch; but as the belt is drawn off from the curved portion of said wheel the carrier closes upon the cigar- 30 bunch and holds it in the manner above described, so that there is no fear of the unwrapping of the binder from the bunch, the cigar-bunch being properly held until it reaches the rear end of the machine, when, 35 as the carrier passes around the other supporting-roll, it is again opened, permitting the operator to remove the cigar-bunch therefrom and place it in the board.

The operation of the machine is quite rapid, 40 and yet a sufficient slow motion for gathering and bunching the filler without spreading it is obtained, the time being saved by the rapid return-stroke of the bunching-frame through the mechanism above described.

The machine can be adjusted in the man- 45 ners above set forth for the making of cigar-bunches of different lengths, thicknesses, or shapes, as may be desired, and the pressure and length of stroke of the different parts 50 may also be correspondingly adjusted, as is found necessary for the proper operation of the machine.

I do not claim under this application the combination, with the apron of a cigar-bunch 55 machine, of a bunch-roller having a gradually-enlarged portion formed on one side of the roll, so as to present a practically even surface on the opposite side, nor the combination, with the apron of a cigar-bunch machine, 60 of a bunch-roller having part thereof stationary or non-rotating and an enlarged part or sleeve mounted on a suitable shaft to turn with the apron, nor the combination, with the apron of a cigar-bunch machine, of 65 a bunch-roller having a shaft with an enlarged stationary part on one side thereof and a

loosely-mounted enlarged part or sleeve, the above subject-matter being in part the invention of Fredrick C. Miller, of Cincinnati, Ohio, and in part my invention, being claimed 70 by me in a patent granted to me May 20, 1890, No. 428,451, and assigned to the Miller, Du Brul & Peters Manufacturing Company, of Cincinnati, Ohio.

What I claim as my invention, and desire 75 to secure by Letters Patent, is—

1. In a cigar-bunching machine, a hopper having a cylindrical base, and the discharge-opening *b'* therein, in combination with the oscillating frame *a*, provided with the arms 80 *a*<sup>2</sup>, one on each side of the discharge-opening *b*, and the cross-bar *a*<sup>3</sup> above the hopper, so as to travel over the discharge-opening, but not in contact with the hopper, so allowing the scrap to pass under said bar, substan- 85 tially as and for the purposes described.

2. In a cigar-bunching machine, the combination of a measuring-case, a measuring-roll within the case, having a pocket therein to receive the filler and deliver it from the case, 90 and a brushing-wheel mounted within the case above the measuring-roll in such position as to leave a space on each side thereof through which the filler may descend to the measuring-roll, said brushing-wheel having 95 the brush formed only on one side thereof, substantially as and for the purposes set forth.

3. In a cigar-bunching machine, the combination of a measuring-case, a measuring-roll therein provided with a pocket to receive the 100 filler and deliver it from the case, and the brushing-wheel mounted within the case above the measuring-roll in such position as to leave a space on each side thereof through which the filler may descend to the measur- 105 ing-roll, the surfaces nearest to each other of the measuring-roll and brushing-wheel turning in opposite directions, and said brushing-wheel having the segmental brush formed only on one side thereof, substantially as and 110 for the purposes set forth.

4. In a cigar-bunching machine, the measuring-roll *D*, having the pocket *d* therein, and having the hollow stud *i'* and the base *i*<sup>3</sup>, carrying the extension *i*<sup>2</sup>, fitting within said stud, 115 and the adjusting-screw *i*, screwing into the extension *i*<sup>2</sup>, substantially as and for the purposes set forth.

5. In a cigar-bunching machine, the hollow measuring-roll *D*, in combination with the 120 threaded bar *g*, the end plates *g'*, having threaded portions engaging with said threaded bar, said plates forming the end plates of the pocket *d*, and the longitudinally-adjustable base-plates forming the base of the pocket, 125 substantially as and for the purposes set forth.

6. In a cigar-bunching machine, the combination of the measuring-roll *D*, having the pocket *d* therein, and the base-plates *i*<sup>1</sup> *i*<sup>3</sup>, longitudinally adjustable with relation to each 130 other, said plate *i*<sup>1</sup> having the flange *i*<sup>7</sup> extending along one end and two sides thereof



and said plate  $v^5$  having the inclined portion  $v^8$ , substantially as and for the purposes set forth.

7. In a cigar-bunching machine, the combination of the case B', having the measuring-roll D mounted at the base thereof, and having the shaft  $d^5$ , provided with the seat  $d^8$ , and the driving-pinion mounted on said shaft  $d^5$  and carrying the spring-pin  $d^7$ , engaging with said seat  $d^8$ , substantially as and for the purposes above set forth.

8. In a cigar-bunching machine, the combination of the measuring-case B' and the measuring-roll D, mounted at the base thereof and formed hollow and provided with openings  $d^6$  to provide for the escape of any filler-dust from the measuring-roll, substantially as and for the purposes above set forth.

9. In a cigar-bunching machine, the combination of a reciprocating bunching-frame L, carrying at its upper end the bunching-roller  $l$  and a smoother  $m$  for smoothing out the binder and bunching-cloth on the table, said smoother being journaled in arms on the frames and arranged in front of the roller, the rolling-plate K, and the bunching-cloth  $k$ , secured at the forward end of said plate and extending back and passing up between the bunching-roll  $l$  and smoother  $m$ , substantially as and for the purposes above set forth.

10. In a cigar-bunching machine, the combination of the adjusting-roll K', the bars  $k^2$   $k^3$ , and the rolling-plate K, and the bunching-cloth  $k$ , secured to the adjusting-roll K', passing thence above the bar  $k^2$ , then around that bar and up between it and the bar  $k^3$ , over said bar  $k^3$ , and thence drooping from the rear side thereof to form the pocket  $k'$  and secured at the forward end of the plate K, substantially as and for the purposes above set forth.

11. In a cigar-bunching machine, the roller K', holding the bunching-cloth, formed in two halves secured together by screws and containing a spring or springs to force open the roll to receive the bunching-cloth, substantially as and for the purposes above set forth.

12. In a cigar-bunching machine, the combination, with the bunching-cloth  $k$ , of the vibrating bunching-frame, the bunching-roll mounted therein, and the smoother journaled in arms on the frame, so as to remain rigid during the outward movement and yield during the return movement of the frame, substantially as and for the purposes set forth.

13. In a cigar-bunching machine, the combination of the bunching-roll  $l$ , the arms  $m'$ , extending out therefrom, one arm having the stops  $m^3$   $m^4$ , and the smoother  $m$ , having the lug  $m^5$ , substantially as and for the purposes above set forth.

14. In a cigar-bunching machine, the combination, with the bunching-table, bunching-roller, and bunching-cloth, of the two eccentric gear-wheels  $c$   $p$ , in engagement with each other, and the reciprocating bunching-frame L, having a slot therein engaging with a pin

on the eccentric gear-wheel  $p$ , substantially as and for the purposes above set forth.

15. In a cigar-bunching machine, the combination, with the bunching-table, bunching-roller, and bunching-cloth, of the eccentric gear-wheel  $c$  on the power-shaft C, the eccentric gear-wheel  $p$ , driven thereby and mounted on the shaft P, and the bunching-frame L, pivoted below said shafts and between the same and having a slot therein engaging with the pin on the wheel  $p$ , substantially as and for the purposes above set forth.

16. In a cigar-bunching machine, the combination, with the bunching-table, bunching-roller, and bunching-cloth, of the eccentric gear-wheel  $c$  on the power-shaft C, the eccentric gear-wheel  $p$ , driven thereby and mounted on the shaft P, and the bunching-frame L, pivoted below said shafts and between the same and having a slot therein engaging with the crank-pin  $p'$  on the wheel  $p$ , the crank-pin  $p'$  being mounted in a radial slot in the wheel  $p$ , substantially as and for the purposes above set forth.

17. In a cigar-bunching machine, the combination, with the chute  $e$  and the bunching-cloth  $k$ , having the droop or pocket  $k'$ , of the frames R, having the portions  $e^2$ , forming the side walls of said chute, and the plates  $r$ , forming the side walls of the pocket or droop  $k'$ , substantially as and for the purposes above set forth.

18. In a cigar-bunching machine, the combination, with the chute  $e$  and the bunching-cloth  $k$ , having the droop or pocket, of the frames R, having the threaded sockets  $r'$  and provided with the side walls  $e^2$  of the chute and side walls of the pocket or droop  $k'$ , and the threaded bars  $s$ , engaging with said threaded sockets  $r'$ , substantially as and for the purposes above set forth.

19. In a cigar-bunching machine, the combination, with the measuring-case B', having the curved base E, and the measuring-roll D, of the frames R, having the curved extensions  $r^2$ , fitting between the roll and the curved base, substantially as and for the purposes above set forth.

20. In a cigar-bunching machine, the combination, with the measuring-case B', having the curved base E, and the measuring-roll D, of the frames R, having the curved extensions  $r^2$ , fitting between the roll and the curved base, and having the horizontal bars  $r^3$ , extending out from said curved extensions, substantially as and for the purposes above set forth.

21. In a cigar-bunching machine, the combination, with the reciprocating frame L, of the frames R, forming the side walls for the chute  $e$  and then extending back, forming a recess into which the bunching-roll passes, and then extending forward below said bunching-roll to form the side walls of the pocket or droop  $k'$ , substantially as and for the purposes above set forth.

22. In a cigar-bunching machine, the trav-

eling belt *t*, having a series of carriers thereon, each carrier being formed by a plate *u'*, secured rigidly to the belt, and a plate *u''*, hinged to the belt and spring-actuated, substantially as and for the purposes above set forth.

23. In a cigar-bunching machine, the combination of the belt *t*, having series of carriers *u* thereon, and the reciprocating frame L, carrying a pawl *v*, engaging with said carriers, substantially as and for the purposes above set forth.

24. In a cigar-bunching machine, the combination, with the belt *t*, having a series of carriers *u* thereon, provided with lips *w*, of the reciprocating frame L, carrying the spring-pawl *v*, engaging with said lips, substantially as and for the purposes above described.

25. In a cigar-bunching machine, the combination, with the belt *t*, having series of car-

riers *u* thereon, of the reciprocating frame L, carrying the spring-pawl *v*, engaging with said carriers, and the horizontal guide-plate *v'*, substantially as and for the purposes above set forth.

26. In a cigar-bunching machine, the combination, with the belt *t*, having series of carriers *u* thereon, of the reciprocating frame L, carrying the spring-pawl *v*, engaging with said carriers, and the plate *v''*, adapted to pass above the pawl *v* and to press the same down to prevent its engagement with the carriers, substantially as and for the purposes above set forth.

In testimony whereof I, the said CLINTON BROWNING, have hereunto set my hand.

CLINTON BROWNING.

Witnesses:

J. N. COOKE,  
F. G. KAY.