

(No Model.)

9 Sheets—Sheet 1.

W. A. HUDSON & J. F. HARTIGAN.  
CONTINUOUS CIGARETTE MACHINE.

No. 587,828.

Patented Aug. 10, 1897.

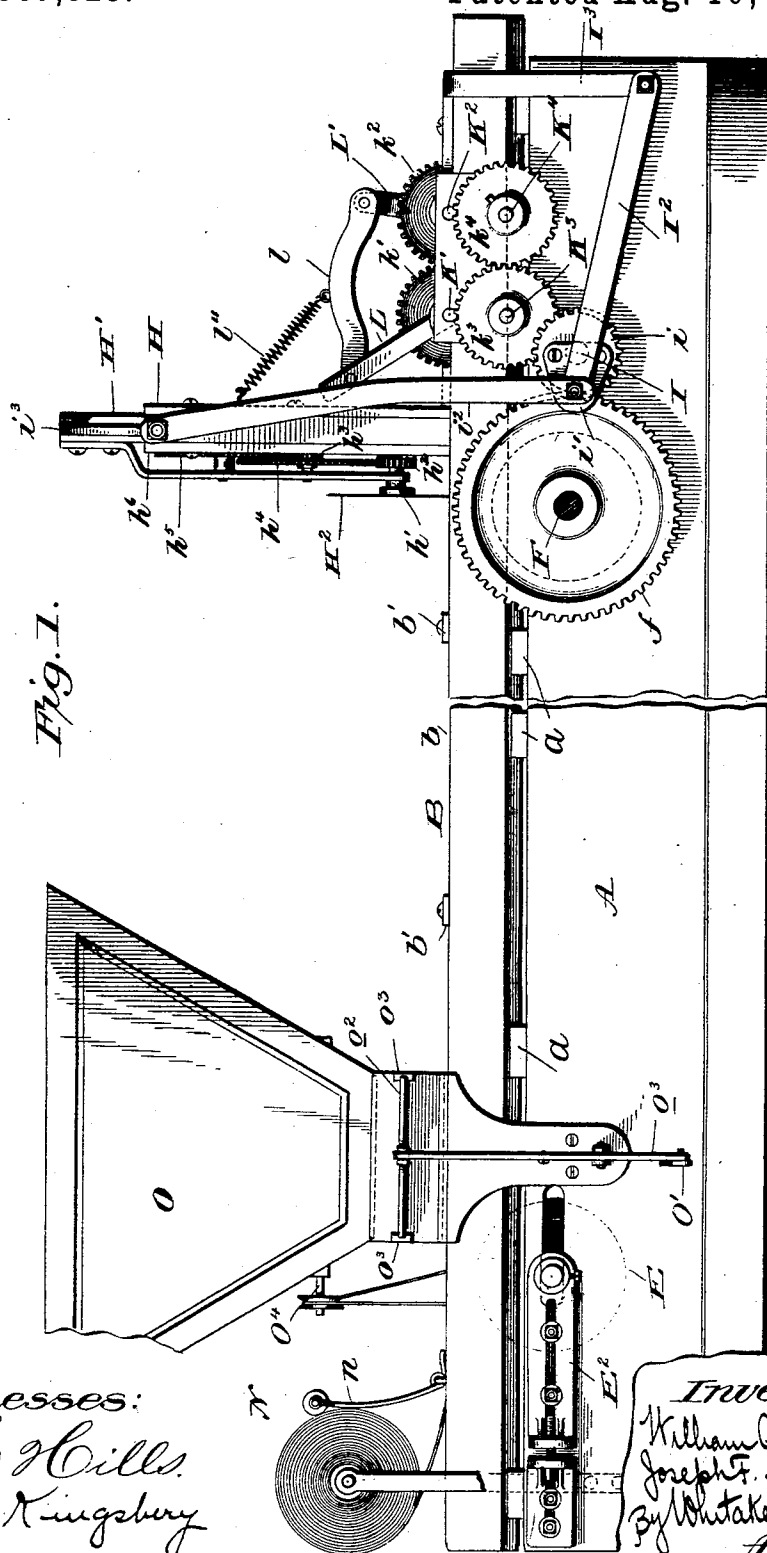


Fig. 1.

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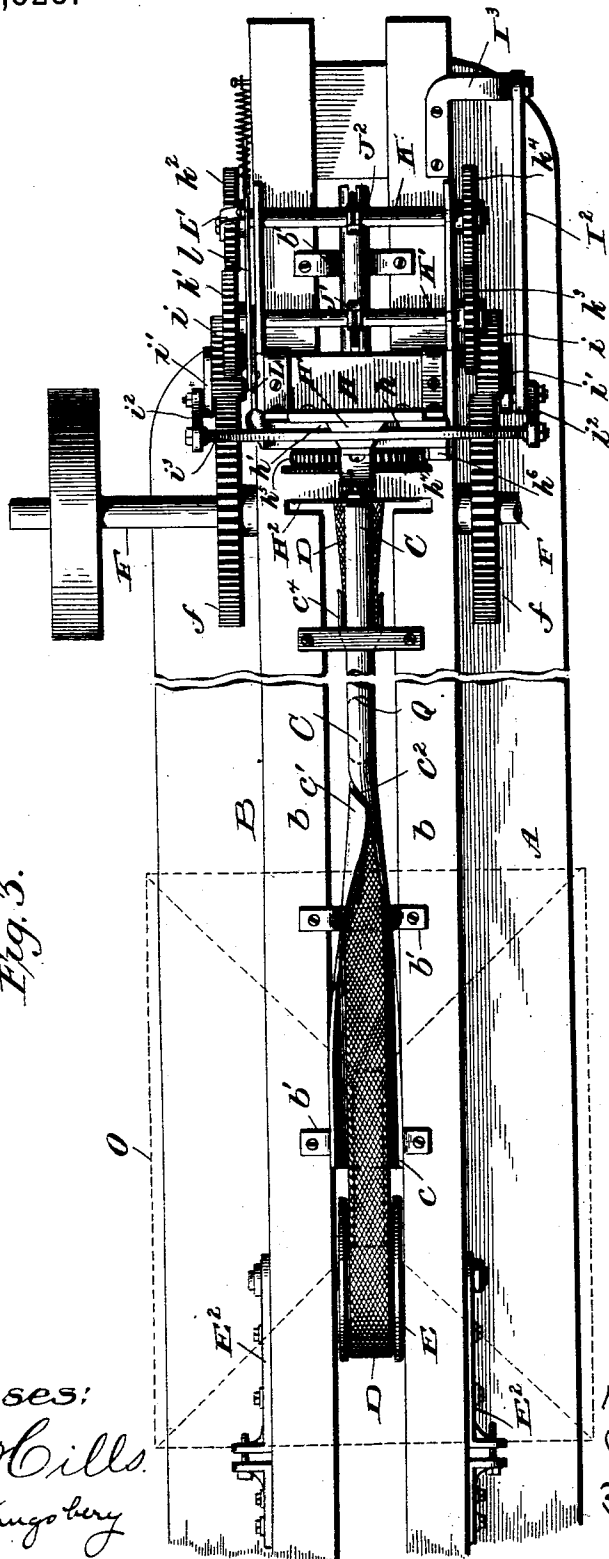
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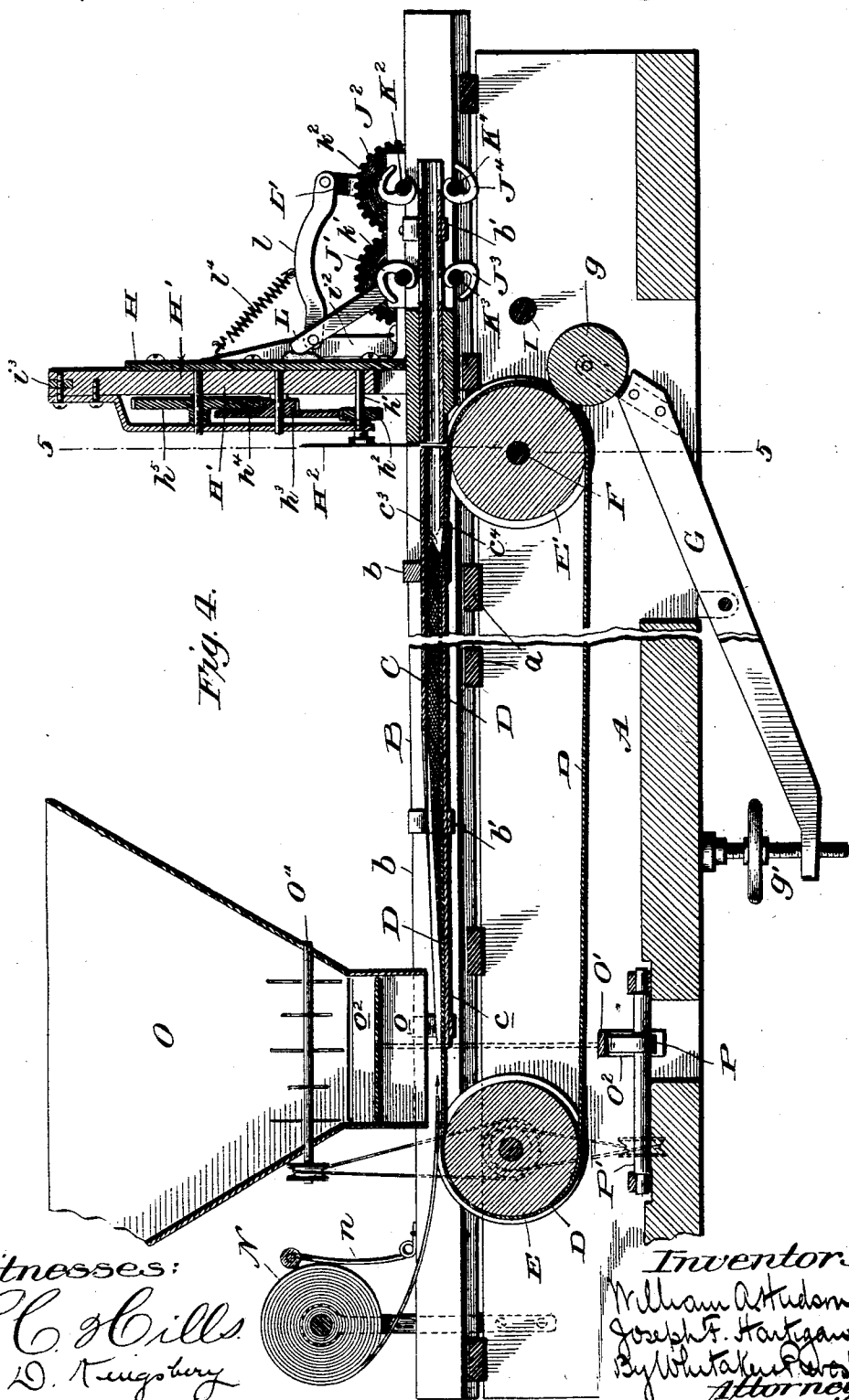
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Fig. 6.

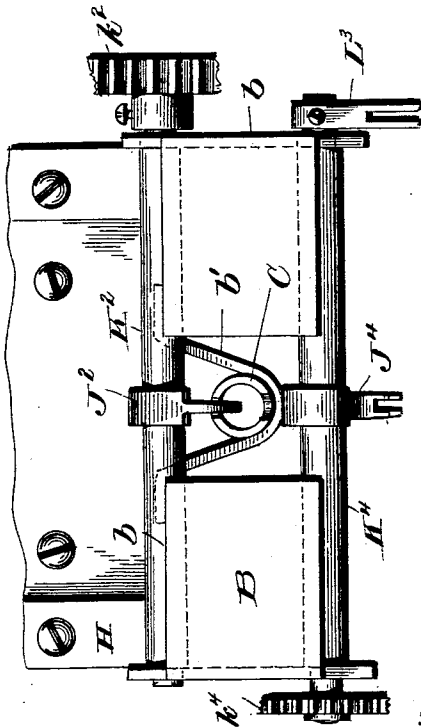


Fig. 8.

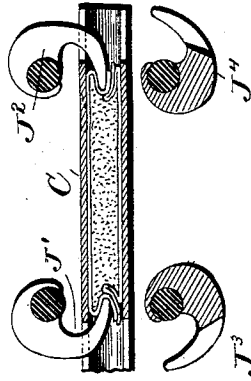


Fig. 7.

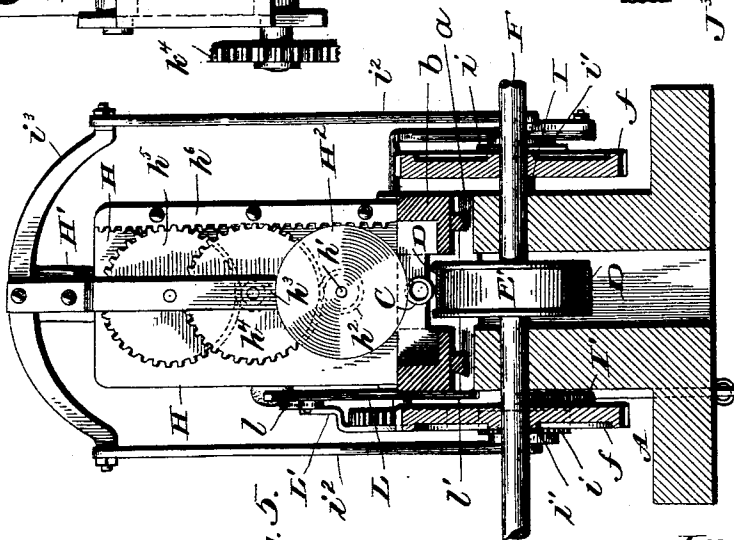
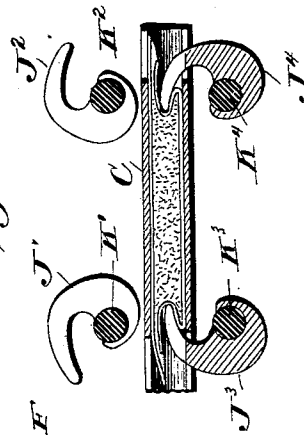


Fig. 5.

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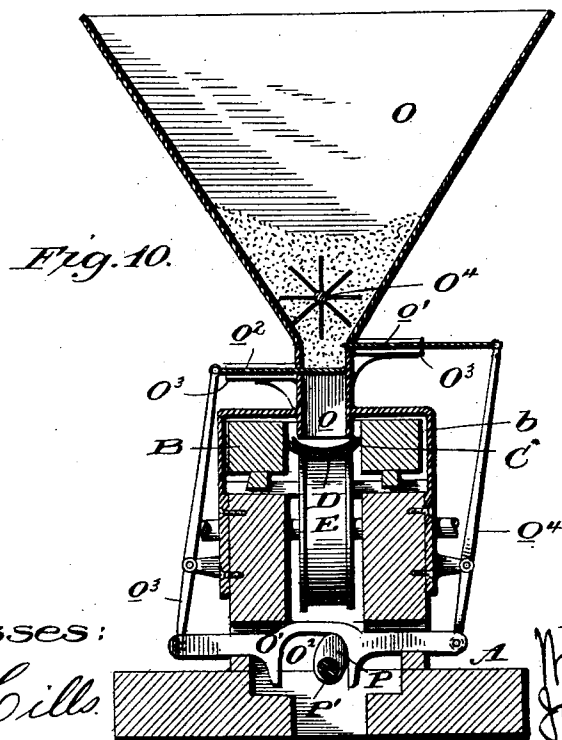
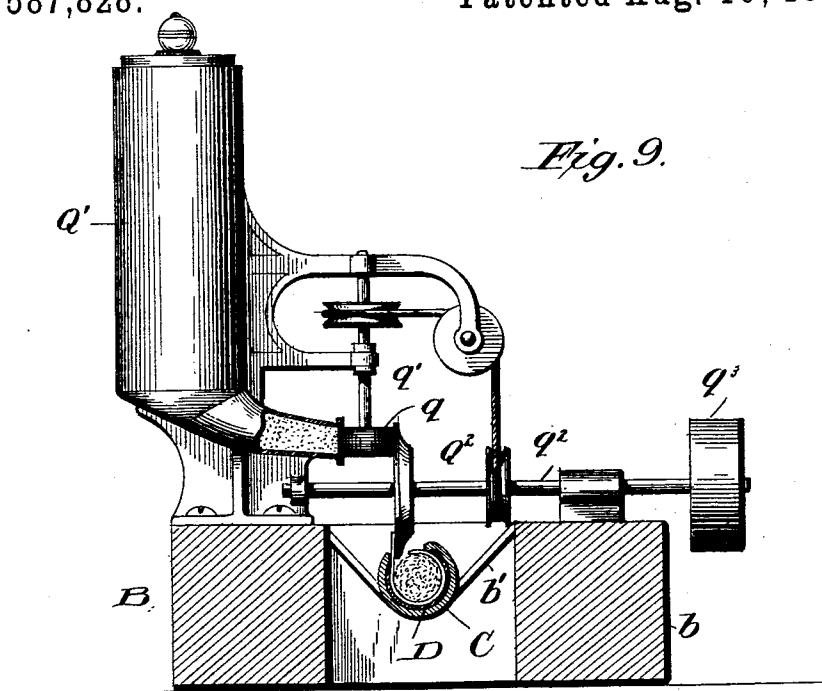
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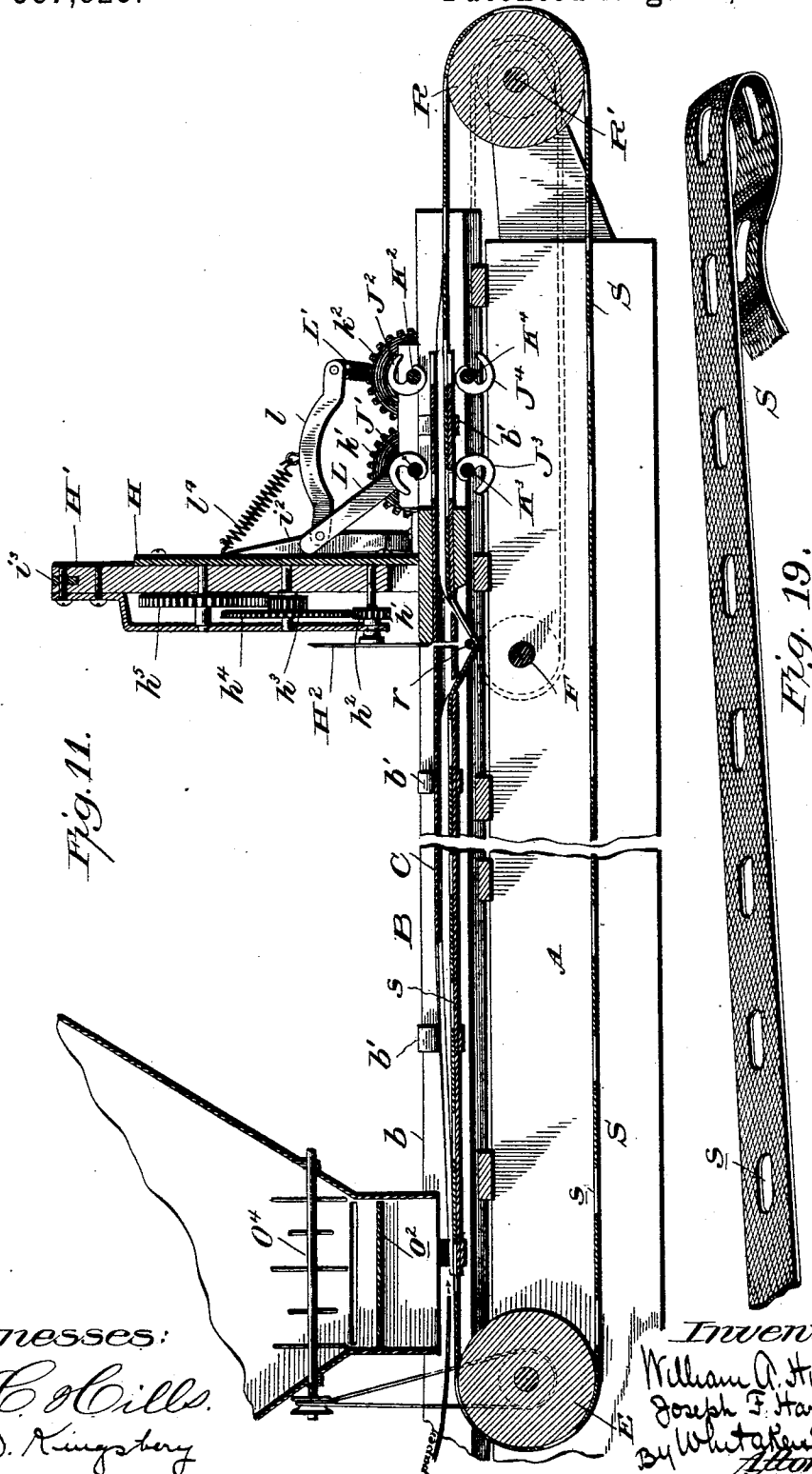
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(No Model.)

9 Sheets—Sheet 9.

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Fig. 15.

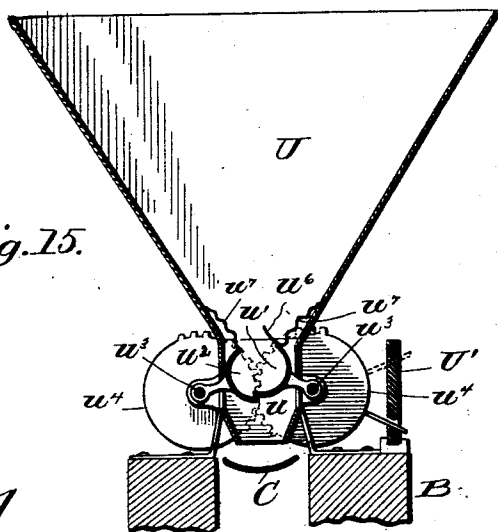


Fig. 16.

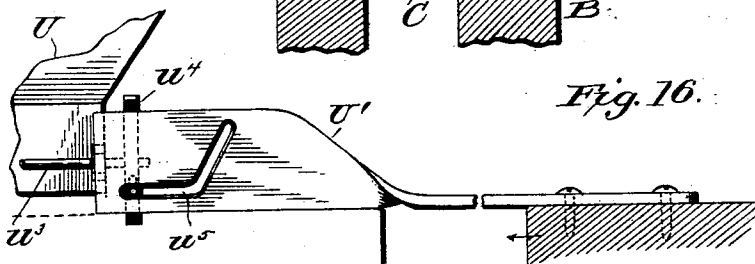


Fig. 17.

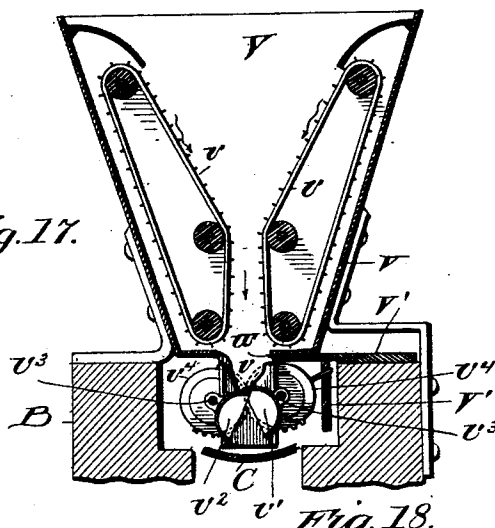
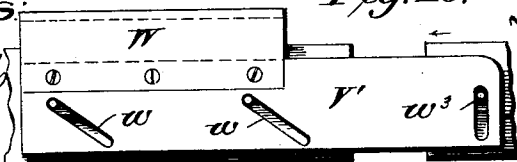


Fig. 18.

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# UNITED STATES PATENT OFFICE.

WILLIAM A. HUDSON AND JOSEPH F. HARTIGAN, OF WASHINGTON, DISTRICT OF COLUMBIA.

## CONTINUOUS-CIGARETTE MACHINE.

SPECIFICATION forming part of Letters Patent No. 587,828, dated August 10, 1897.

Application filed January 10, 1896. Renewed December 22, 1896. Serial No. 616,683. (No model.)

*To all whom it may concern.*

Be it known that we, WILLIAM A. HUDSON and JOSEPH F. HARTIGAN, citizens of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Continuous-Cigarette Machines; and we 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.

Our invention consists in the novel features of construction and combination of parts hereinafter described, reference being had to the accompanying drawings, which illustrate one form in which we have contemplated embodying our invention and several slight modifications of parts hereof, and said invention is fully disclosed in the following description and claims.

Referring to the said drawings, Figure 1 represents a left side elevation of a cigarette-machine embodying our invention, a portion of the machine being broken away. Fig. 2 represents a right side elevation of the same. Fig. 3 represents a top plan view of the machine, portions being broken away and the hopper being removed, but its position indicated by dotted lines. Fig. 4 represents a central longitudinal vertical section of the machine. Fig. 5 represents a transverse sectional view on line 5 5 of Fig. 4. Fig. 6 represents a front end view of a portion of the machine, showing the tucking-tube and the upper and lower tucking-fingers. Figs. 7 and 8 are detail sectional views showing the tucker-tube and illustrating the action of the lower and upper tucking-fingers, respectively, in tucking a cigarette. Fig. 9 is a detail view of a form of pasting mechanism adapted for use in our improved machine. Fig. 10 represents a vertical transverse section of the machine through the tobacco-hopper, showing one form of mechanism for feeding the desired quantity of tobacco. Fig. 11 represents a longitudinal vertical section of a machine, showing a modified form of forming and carrying belt and its adjuncts, the other parts of the machine being the same as in the preceding figures. Fig. 12 is a top plan view of a slightly-modified machine, showing the cutter located in a

different position and a slightly different form of tucking-tube. Fig. 13 is a vertical longitudinal sectional view of the same. Fig. 14 is a transverse sectional view of the same. Fig. 15 represents a sectional view of a slightly-modified form of feeding device for feeding determinate quantities of granulated tobacco. Fig. 16 is a detail view of a part of the same. Fig. 17 represents a sectional view of a feeding device for long-cut or leaf tobacco. Fig. 18 is a detail view of the tobacco-knife forming part of the same. Fig. 19 is a detail perspective view of the slotted belt.

Our invention is an improvement on the machine described and claimed in the prior application for Letters Patent of the United States filed by William A. Hudson, one of the inventors herein, dated June 11, 1895, and given Serial No. 552,388, and we do not therefore claim herein any of the subject-matter covered by the claims in the said prior application.

In the drawings, A represents the main frame of the machine, which consists in this instance of two parallel side pieces adapted to be supported upon a suitable table or support and held at a short distance apart to allow portions of the machine to be placed between them. Upon the upper faces of these side pieces we have shown suitable guides *a*, adapted to engage and support a dovetailed slide on the bottom of a longitudinally-movable carriage B, which extends in this instance the entire length of the main frame, although this is not essential.

The side pieces *b b* of the sliding carriage B are secured together by suitable braces, in this instance brackets or hangers *b' b'*, which also serve to support the stem-forming tube C, which is held thereby, said hangers being removably secured to said side pieces *b b* so as to be removable from the sliding carriage when desired. This forming-tube C is cut open at its rear end and is flattened, as shown at *c*, and is provided adjacent to the flattened portion with gradually-inclined sides leading up to the cylindrical portion of the tube. Adjacent to the said cylindrical portion one side or edge of the tube is provided with a folding-lip *c'* and a curved slot *c''*, adjacent thereto, by means of which one edge of the paper

wrapper will be folded over the other in a well-known way.

D represents the endless stem-forming belt, the upper portion of which extends through a portion of the forming-tube C, leaving it by means of a suitable aperture  $c^3$ , adjacent to its forward end, the said tube being provided with a flaring guiding-flange  $c^4$ , adjacent to said aperture, to guide the belt as it leaves the tube. This belt is supported upon an idle-roller E, preferably grooved, the shaft of which is mounted in the main frame adjacent to the rear end of the machine, and a driving-roller E' (also preferably grooved) on the driving-shaft F of the machine, (also mounted in bearings in the main frame,) by means of which the belt is driven continuously at the desired speed. The shaft of the idle-roller E is provided, preferably, with a suitable belt-tightening device E<sup>2</sup> (see Figs. 1, 2, and 3) of any usual or desired construction. We also provide a device (shown in Fig. 4) for preventing the slipping of the belt on the driving-roller E'. This consists in this instance of a friction-roller g, supported in the end of a pivoted lever G, the lower end of which is provided with a screw-threaded adjusting device g' for regulating the pressure of the roller upon said belt.

Forward of the point at which the belt leaves the forming-tube C the carriage B is provided with a vertical knife-supporting standard H, provided with suitable vertical guides h, in which the vertically-sliding knife-carrying frame H' is mounted. (See Figs. 4 and 5.) In the lower part of this frame is journaled the knife-shaft h', carrying the rotary knife H<sup>2</sup> and a pinion h<sup>2</sup>, which is engaged by a suitable train of gears h<sup>3</sup> h<sup>4</sup> h<sup>5</sup>, supported in the knife-carrying frame, the gear h<sup>5</sup> meshing with a stationary rack h<sup>6</sup> on the vertical standard H, and thereby transmitting rapid rotary motion to the knife or cutter as the knife-carrying frame is moved up and down. In this instance we have shown a knife-operating shaft I, mounted in the main frame forward of the driving-shaft and provided with pinions i i, which engage gears f f on said driving-shaft. The pinions i i are also provided with crank-pins i' i', connected by links i<sup>2</sup> i<sup>2</sup> with a cross-bar i<sup>3</sup>, secured to the upper end of the knife-carrying frame, thus raising and lowering the frame and operating the knife or cutter.

The tube C is separated slightly just beneath the knife to allow the knife to pass through the stem and tube in severing the stem into individual cigarettes, as is clearly shown in Fig. 4.

Forward of the knife or cutter the movable carriage is provided with the tucking devices for tucking the ends of the individual cigarettes. These devices consist of the upper tucking-fingers J' J<sup>2</sup>, mounted on transversely-extending shafts K' K<sup>2</sup>, respectively, and the lower tucking-fingers J<sup>3</sup> J<sup>4</sup>, mounted on the shafts K<sup>3</sup> K<sup>4</sup>, supported in the carriage

below shafts K' K<sup>2</sup>, respectively. The upper-tucker shafts K' K<sup>2</sup> are provided with intermeshing gears k' k<sup>2</sup>, (see Fig. 2,) which insure the simultaneous operation of the upper tucking-fingers in opposite directions. The lower-tucker shafts K<sup>3</sup> K<sup>4</sup> are provided with similar intermeshing gears k<sup>3</sup> k<sup>4</sup>, which are conveniently located on the side of the machine opposite the gears k' k<sup>2</sup> (see Fig. 1) and which cause said shafts to rotate in opposite directions.

An operating-lever L is mounted pivotally upon the shaft K' and is connected by a link l with an arm L', rigidly connected with the shaft K<sup>2</sup> for moving the upper tucking-fingers, and the said operating-lever is also provided with a downwardly-extending arm l', adapted to be engaged by the operating means hereinafter described. A spring l<sup>x</sup>, connected to the link l and to a part of the knife-supporting standard, serves to return the tucking-fingers to their normal positions after operating by drawing the arm L against a suitable buffer on the standard; but other means can be substituted to accomplish the same result. The shaft K<sup>4</sup> is provided with an operating-arm L<sup>3</sup>. In this instance we have shown a lever L<sup>2</sup>, pivoted to the main frame and having a part in position to be engaged by the tucker-operating devices, said lever having one end connected with the arm L<sup>3</sup> by a link l<sup>2</sup> and its other end connected with a retracting-spring l<sup>2</sup>, secured to the main frame. The knife-operating shaft I is provided with a cam I', (see Fig. 2,) which revolves in the direction indicated by the arrow in Fig. 2 and first strikes the lever L<sup>2</sup>, thereby operating the lower tucking-fingers, forcing them into the opposite ends of a severed cigarette, as indicated in Fig. 7, after which the spring l<sup>2</sup> restores them to their normal position. The cam in its further movement then strikes the lower arm l' of the lever L, and thus operates the upper tucking-fingers, which complete the tucking of the cigarette, as indicated in Fig. 8. The relation of the cam I' and the levers L<sup>2</sup> and L is such that the movement of the carriage B, carrying with it the tucking devices, does not affect the proper operation of the parts.

When the tucking-fingers tuck the ends of the cigarette, the tobacco in the wrapper is pushed back from the ends and slightly compressed, thereby offering a compact body against which the paper is pressed by the tucking-fingers and assisting in the crimping operation.

It will be seen from the drawings and the foregoing description that while the belt is supported by the main frame and is given a continuous movement by the driving-shaft the sliding carriage carrying the stem-forming tube and the cutter and the tucking devices are capable of movement independently thereof. This carriage is given a forward movement with the belt at the same rate of speed and a rearward movement at

the same speed, the distance it moves in each direction being substantially equal to one-half the length of a cigarette before it is tucked. This movement may be effected in any desired way. In this instance we have shown one of the pinions  $i$  on the knife-operating shaft (see Figs. 1 and 3) provided with a crank-pin connected by a pitman-rod  $l^2$ , the forward end of which is connected pivotally with a bracket  $l^3$ , connected with the carriage. By this means (the parts being properly timed) the carriage will move forward with the cigarette-stem and at the same rate of speed during the operation of the cutter and of the tucking devices, after which it moves rearwardly. In moving rearwardly half the length of a cigarette the belt moving continuously all the time will have carried the stem forward full length of a cigarette, so that the operations of cutting and tucking will be repeated on the next forward movement of the carriage. In this manner the cutting and tucking operations will not interrupt the progress of the cigarette-stem and will not bruise or buckle the cigarettes or the wrappers thereof.

The paper will preferably be drawn from a roll  $N$ , supported by brackets at the rear end of the machine and provided with a suitable tension device, as indicated at  $n$ .

In feeding granulated tobacco we use a hopper  $O$ , of any usual or preferred form, secured to the main frame of the machine and having a narrowed vertical discharge-passage  $o$ , located above the paper and belt and forward of the rear belt-roller  $E$ , and we prefer to provide the said hopper with a mechanism for feeding a measured quantity of tobacco. In Figs. 1, 2, 4, and 10 we have shown one form of measuring device which we contemplate using. In these figures,  $o'$   $o^2$  represent horizontal slides mounted in grooved guides  $o^3$ , secured to the exterior of the hopper, said slides being adapted to be forced alternately into the interior of the delivery-passage  $o$  through slots in the opposite sides. These slides are arranged in different horizontal planes, the space within said passage  $o$  between the slides containing the quantity of tobacco which it is desired to feed.

In the lower part of the main frame below the roller  $E$  is a transversely-sliding bar  $O'$ , which moves in guiding-slots in the frame and has a yoke  $O^2$ , which is engaged by a cam  $P$  on a longitudinally-extending shaft  $P'$ , driven in this instance by a belt from the shaft of belt-roller  $E$ . The ends of the transverse slide-bar  $O'$  are connected by levers  $O^3$   $O^4$  with the slides  $o'$   $o^2$ , said levers being fulcrumed in brackets secured to the main frame of the machine. The operation of the slides will be understood from Fig. 10. When the slide-bar  $O'$  is in the position shown in that figure, the tobacco is permitted to fall down upon the lower slide. When the slide-bar  $O'$  is shifted by the cam to its opposite position,

the upper slide will be pushed in to cut off the supply of tobacco and the lower slide will be withdrawn to permit the amount of tobacco between the two slides to fall upon the paper. In order to prevent clogging of the hopper, we prefer to employ a stirrer  $O^4$ , (see Figs. 10 and 4,) which is driven by a belt from the shaft of belt-roller  $E$ , as shown.

It will be seen that the successive charges of tobacco will be deposited upon the paper end to end, so as to form a continuous filler.

In some instances we may desire to paste the paper wrapper as it passes through the stem-forming tube, and in Fig. 9 we have shown a form of pasting mechanism which is advantageously employed in this connection. In such case the stem-forming tube is slotted for a short distance, as shown at  $Q$  in dotted lines, Fig. 3, to allow the paste-wheel to engage one edge of the continuous wrapper.

As shown in Fig. 9,  $Q'$  represents a paste-receptacle having a tapered spout, the end of which is closed by a horizontal roll  $q$  on a vertical shaft  $q'$ . The paste-roller  $Q^2$  is vertical and is supported on a horizontal shaft  $q^2$  in position to properly engage the paper through the slot  $Q$ . The shaft  $q^2$  is driven by means of the pulley  $q^3$  in any desired way, and the vertical shaft  $q'$  is driven by a belt or cord from the shaft  $q^2$ , as shown. The small roller  $q$  will take the paste from the spout of the receptacle  $Q'$  and will distribute it upon the surface of the paste-roller, adjacent to the periphery of the same, thereby securing an even feed of the paste and also grinding it and smoothing it, so as to remove lumps and put it into the best condition to be transferred to the paper.

In Figs. 11 and 19 we have shown a slight modification of our invention in which the elements are the same as in the machine just described except that the carrying-belt is of peculiar construction and extends entirely through the tube past the tucking mechanism to the front of the machine, where it passes over a driving-roller  $R$  on a shaft  $R'$ , which is driven from the driving-shaft of the machine by means of sprocket-gearing, as indicated in dotted lines. Just beneath the cutter the belt makes a dip, leaving the tube, passing beneath a guide rod or roller  $r$ , and entering the tube again beyond the knife. This construction prevents the knife from cutting the belt when it severs the continuous cigarette-stem. The belt  $S$  is provided at suitable intervals with longitudinal slots or apertures  $s$ , which are provided for the purpose of allowing the lower tucking-fingers to pass up through the belt to tuck the cigarettes, as clearly appears in Fig. 11. These apertures are formed in any desired way and are arranged at the required intervals throughout the length of the belt. This construction is found to be very advantageous, as the belt positively carries the cigarette through the entire length of the tube instead of having the severed cigarettes pushed out

by the moving continuous stem, as in the construction first described. This perforated belt, however, is not claimed herein, it being included in the subject-matter of another application, filed by William A. Hudson, dated January 10, 1896, and given Serial No. 574,972.

In both of the constructions previously described it will be seen that at all times during the operation of the machine there are two severed cigarettes in the tube which must be moved onward, one in the tucking devices and another between said devices and the cutter. In order to avoid this effect and have only one severed cigarette in the tube, we sometimes employ the construction illustrated in Figs. 12, 13, and 14. In these figures the knife-standard, cutter, and cutter-operating devices are of the same construction, except that they are turned around so that the knife is on the side of the standard adjacent to the tucking mechanism, so that as soon as a cigarette is severed it is cut off and the intermediate cigarette, which exists in the form of machine previously described, is done away with. In order to secure the proper operation of the parts, the tucking-tube T is made separate from the main tube and is mounted to reciprocate longitudinally in guides  $t$   $t$ , secured to the inner sides of the sliding carriage which carries the tube and cutting mechanism. Above the tuckers is a vertically-disposed operating-lever  $t'$ , pivoted at  $t^2$  to a suitable support and pivotally connected to the tucking-tube T. The upper end of lever  $t'$  is slotted, as shown, and is engaged by a pin on an arm  $t^3$ , rigidly secured to the vertically-moving knife-carrying frame. When the knife descends and severs a cigarette from the continuous stem in the usual manner, it will leave the severed cigarette in the tucking-tube, but not in proper relation with the tuckers. The knife-frame, however, instantly rises and the arm  $t^3$ , acting on lever  $t'$ , moves the tucker-tube forward in the direction of the arrow, Fig. 13, so as to carry it past the rear tucking-fingers, and thus places it in exactly the proper position with respect to the tucking-fingers before they are operated. It will be understood that the carriage has in this instance the same reciprocating movement previously described and the movements of the tucking-tube are with respect to said carriage.

In Figs. 15 and 16 we have shown a tobacco feeding and measuring device which is a slight modification of that shown in Fig. 10. In these figures, U represents the hopper, having the contracted delivery-passage.  $u$ ,  $u'$ , and  $u^2$  represent a pair of semicylindrical cups, each of which is rigidly secured to a rock-shaft  $u^3$ , mounted in brackets on the exterior of said passage  $u$  in such a manner that when the cups are rocked upwardly their lower opposing edges overlap and their upper edges separate or open and when rocked downwardly do the reverse. In this manner the cups can be alternately filled and emptied

by rocking them simultaneously upwardly and then downwardly, thereby delivering a charge of tobacco upon the paper and belt beneath. To secure a simultaneous movement of these cups, the rock-shafts  $u^3$   $u^3$  are provided with intermeshing gears or gear-segments  $u^4$   $u^4$ , as shown, and one of said gears or segments is provided with an operating-arm, which in this instance is engaged by a slotted bar U', secured to the rear end of the reciprocating carriage, the hopper being in this instance mounted on the main frame beyond the rear end of the carriage, as indicated in Fig. 16. The slot  $u^5$  in the bar U' is so constructed as to rock the axis or segments first in one direction and then in the other, so as to deliver a charge of tobacco at every reciprocation of the carriage. The cups  $u'$   $u^2$  can be so formed as to contain just enough tobacco for a single cigarette. We have shown one of the cups  $u'$   $u^2$  provided with a rake  $u^6$ , which agitates the tobacco above the cups and prevents clogging. In order to prevent the tobacco from dropping in rear of said cups, we provide strips  $u^7$   $u^7$ , of canvas or other flexible material, secured to the upper edges of the cups and to the sides of the passage  $u$ .

In Figs. 17 and 18 we have shown another slightly-modified form of feeding mechanism which is intended for use in feeding "long-cut" or fibrous tobacco or for feeding leaf-tobacco and cutting it into long cut as it is fed to the paper. In these figures, V represents the hopper, which is provided on opposite sides with conveying-aprons  $v$   $v$ , adapted to be driven in any desired way for feeding the tobacco downward and compressing it into a stream or column. Below the conveyers are the cups  $v'$   $v^2$ , similar to the cups  $u'$   $u^2$  just described and operated in the same manner by a bar V', secured to the reciprocating carriage. W represents a tobacco-knife which is preferably secured to a reciprocating shank which is provided with inclined slots  $w$ , through which pass studs  $w'$ , which secure it to the top of one of the side frames. The delivery-passage of the hopper V is provided with a slot for the admission of the knife W just below the conveyers  $v$   $v$ , so that when the knife is forced inward it will cut off a quantity of the tobacco, which will fall into the cups  $v'$   $v^2$  beneath. The shank of the knife is secured to the carriage preferably as shown in Fig. 18, in which it is illustrated as being provided with a slot  $w^2$ , engaged by a pin  $w^3$  on the carriage, so that as the carriage reciprocates the knife will be moved in and out by means of the inclined slots  $w$   $w$ . When long-cut tobacco is used, it is placed in the hopper and fed down by the conveyers  $v$   $v$  in a sheet, so that each time the knife is forced inward it will cut off a quantity of the tobacco, which falls into the cups, as before stated. As the cups move from their uppermost position to their lowest position the tobacco will be slightly com-

pressed into a rod form and then dropped upon the paper.

When leaf-tobacco is used, the leaves will be fed to the conveyers *v v* in a thick layer, and each movement of the knife will cut off a quantity of the tobacco, which as it falls into the cups *v' v'* will have its strands lying parallel, thus producing straight-cut cigarettes in which the fibers will run lengthwise of the cigarette.

When using the device with leaf-tobacco, it may be necessary to impart several movements to the knife to each reciprocation of the carriage, and, if so, this can be readily accomplished by slightly-varying the connection between the knife-shank and carriage without departing from our invention.

We do not desire to be limited to the exact details of construction herein shown and described, as variations may be made in the same without departing from the spirit of our invention.

What we claim, and desire to secure by Letters Patent, is—

1. The combination with mechanism for forming a continuous tobacco rod and folding a wrapper about the same, of a cutter for severing said wrapped rod into individual cigarettes and tucking devices operatively connected with the continuous-cigarette-forming devices for crimping the wrapper at each end of a severed cigarette after it is severed, and operating means, substantially as described.

2. The combination with mechanism for forming a continuous tobacco rod and folding a wrapper about the same, of a cutter for severing said wrapped rod into individual cigarettes, tucking devices operatively connected with the continuous-cigarette-forming devices adapted to engage the wrapper at opposite ends of the severed cigarette and means for moving the wrapper-engaging portions of said tuckers toward each other to crimp the paper at both ends of the severed cigarette simultaneously, substantially as described.

3. The combination with devices for forming a tobacco rod, and folding a wrapper about the same including the longitudinally-reciprocating forming-tube, the traveling belt having a portion extending through said tube, the cutter and tucking devices operatively connected with the continuous-cigarette-forming devices, substantially as described.

4. The combination with the longitudinally-reciprocating forming-tube, and tobacco-carrying belt having a part extending through said tube, means for moving said belt continuously in one direction, a cutter and tucking devices operatively connected with the continuous-cigarette-forming devices, substantially as described.

5. The combination with the longitudinally-reciprocating forming-tube, and the tobacco-carrying belt having a part passing through said tube, the cutter and the tucking devices, of means for moving said belt continuously and devices for reciprocating said

tube, cutter and tucking devices simultaneously, substantially as described.

6. The combination with the main frame and the tobacco-feeding belt supported therein, of the longitudinally-movable carriage, a forming-tube carried thereby and engaging a portion of said belt, a cutter mounted on said carriage, tucking devices also mounted on said carriage, means for moving said belt continuously and means for reciprocating the said carriage and operating said knife and tucking devices, substantially as described.

7. The combination with means for forming a continuous cigarette including the forming-tube, of a perforated belt having a part passing longitudinally therethrough, a cutter and tucking devices operatively connected with the continuous-cigarette-forming devices and having parts adapted to pass through the perforations of said belt, substantially as described.

8. The combination with the forming-tube, of a forming-belt provided with perforations located at intervals throughout its length and having a part passing through said tube, of a cutter and the tucking devices, the latter having parts adapted to engage said perforations, substantially as described.

9. The combination with the longitudinally-reciprocating forming-tube, of the belt provided with perforations located at intervals throughout the length thereof, the cutter, tucking devices for tucking the ends of severed cigarettes, said tucking devices having parts adapted to pass through the said perforations of said belt, means for moving said belt continuously and means for reciprocating said tube, substantially as described.

10. The combination with means for forming a tobacco rod and folding a wrapper about the same, of a pasting mechanism for pasting the wrapper, a cutter for severing said wrapped and pasted rod into individual cigarettes and tucking devices operatively connected with the continuous-cigarette-forming devices for crimping the wrapper at each end of a severed cigarette after it has been severed, substantially as described.

11. The combination with means for forming a tobacco rod and folding a wrapper about the same, of a paste-receptacle, a paste-supplying wheel closing the delivery-mouth of said receptacle, a pasting-wheel engaging said supplying-wheel having its axis of rotation perpendicular to the axis of said supplying-wheel, a cutter and tucking devices operatively connected with the continuous-cigarette-forming devices, substantially as described.

12. The combination with the main frame, of the longitudinally-reciprocating carriage thereon, the tobacco-carrying belt, the forming-tube carried by said carriage and engaging a portion of said belt, the cutter carried by said carriage, the tucker-tube movable longitudinally in said carriage, the tucking devices adapted to crimp the ends of a cigarette, substantially as described.

rette in said tucking-tube, devices for reciprocating said carriage and devices for moving said tucking-tube independently of said carriage, substantially as described.

5 13. The combination with the mechanism for forming a tobacco rod and folding a wrapper about the same, the cutter and tucking devices operatively connected with the continuous-cigarette-forming devices, of a tobacco-hopper and devices for feeding determinate quantities at intervals to said forming devices, substantially as described.

10 14. The combination with mechanism for forming a continuous cigarette including the forming-tube and belt, the cutter and tucking devices operatively connected with the continuous-cigarette-forming devices, of the tobacco-hopper, the opposing pivoted, semicylindrical cups and devices for oscillating  
15 said cups simultaneously, to feed a determined quantity of tobacco to said belt, substantially as described.

20 15. The combination with mechanism for forming a continuous cigarette including the longitudinally-reciprocating forming-tube, the belt, the cutter and tucking devices oper-

atively connected with said continuous-cigarette-forming devices, of a tobacco-hopper, the opposing semicylindrical pivoted cups, and devices connected operatively with said forming-tube for oscillating said cups simultaneously to feed a determined quantity of tobacco to said belt, substantially as described.

16. The combination with mechanism for forming a continuous cigarette including the forming-tube and belt, the cutter and tucking devices operatively connected with the continuous-cigarette-forming devices, of the tobacco-hopper having the tobacco-cutting knife, the pivoted semicylindrical opposing cups below said knife and means for oscillating said cups simultaneously, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

WILLIAM A. HUDSON.  
JOSEPH F. HARTIGAN.

Witnesses:

L. P. WHITAKER,  
J. D. KINGSBERRY.