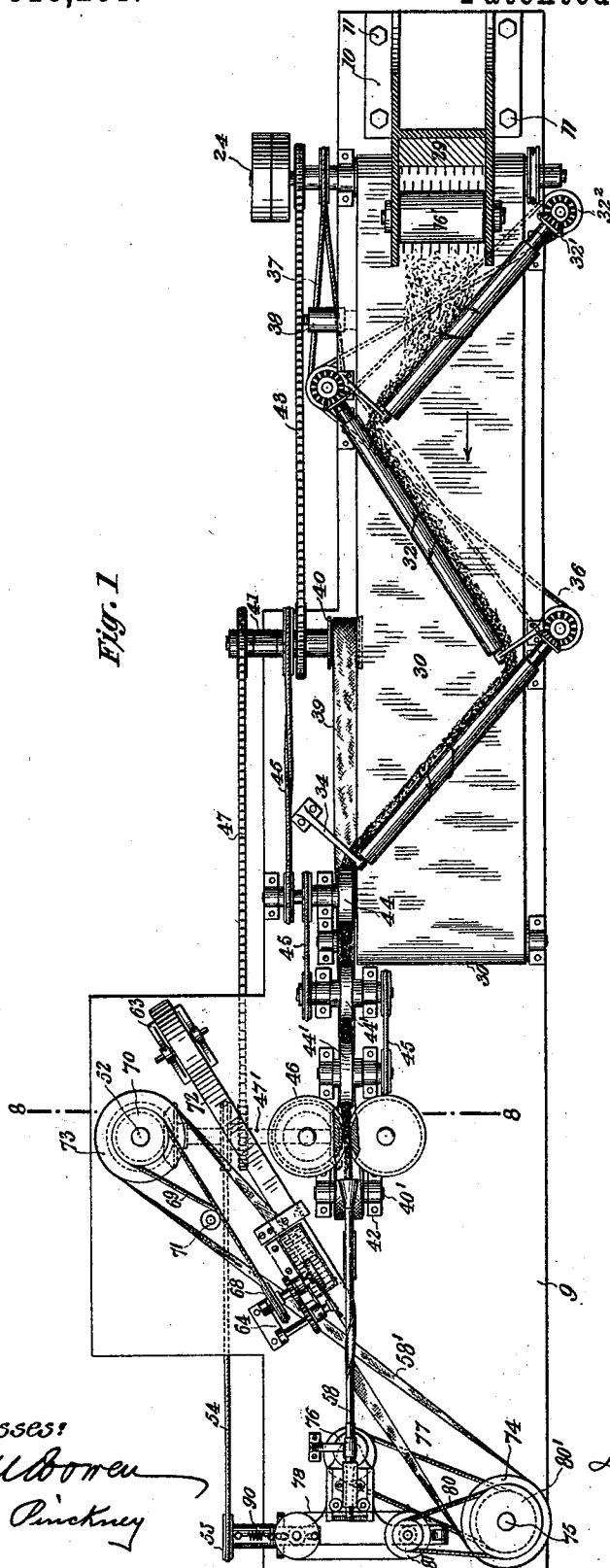


L. L. MAXFIELD.
CIGARETTE MACHINE.

No. 518,261.

Patented Apr. 17, 1894.

Fig. 1



Witnesses:

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(No Model.)

4 Sheets—Sheet 2.

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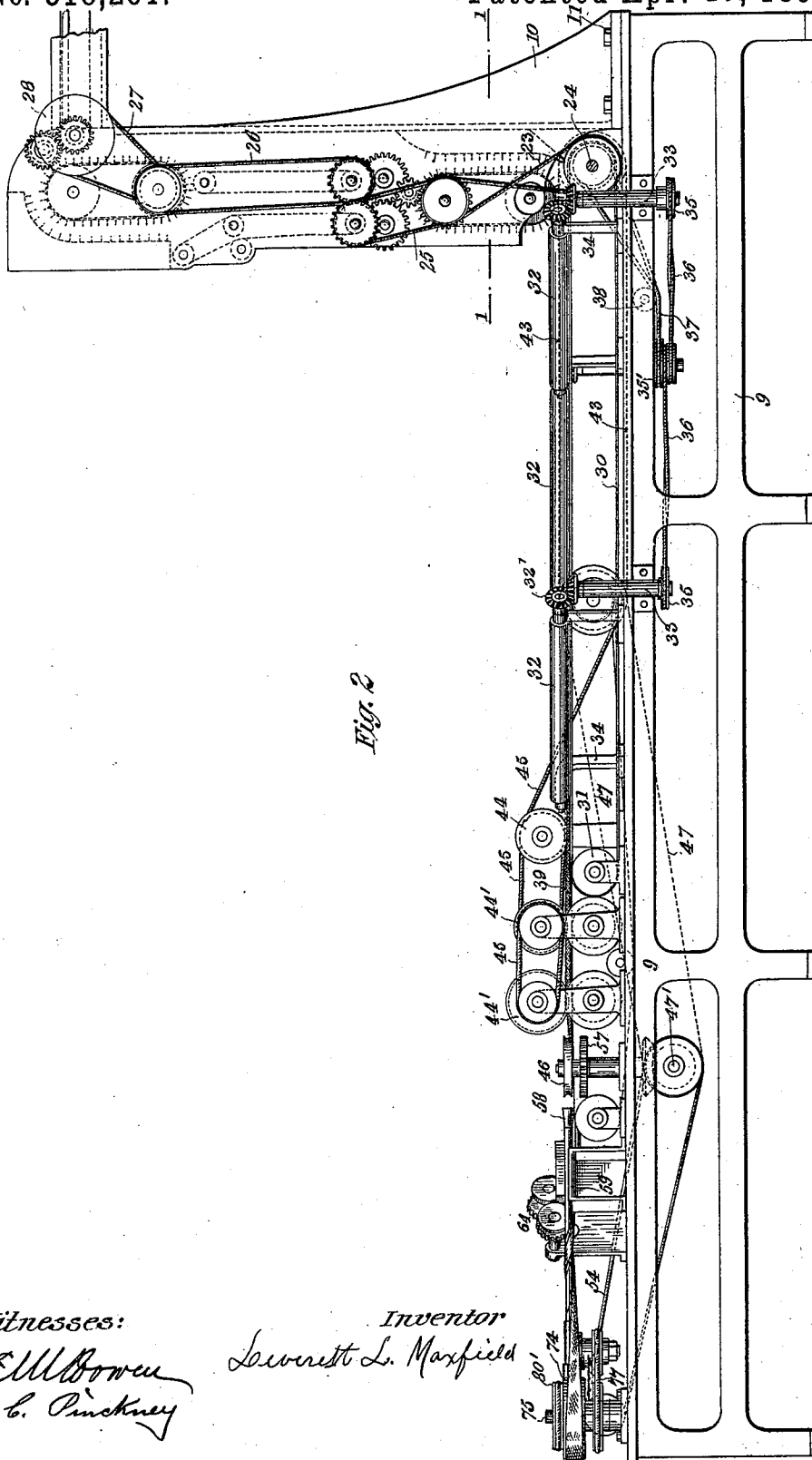


Fig. 2

Witnesses:
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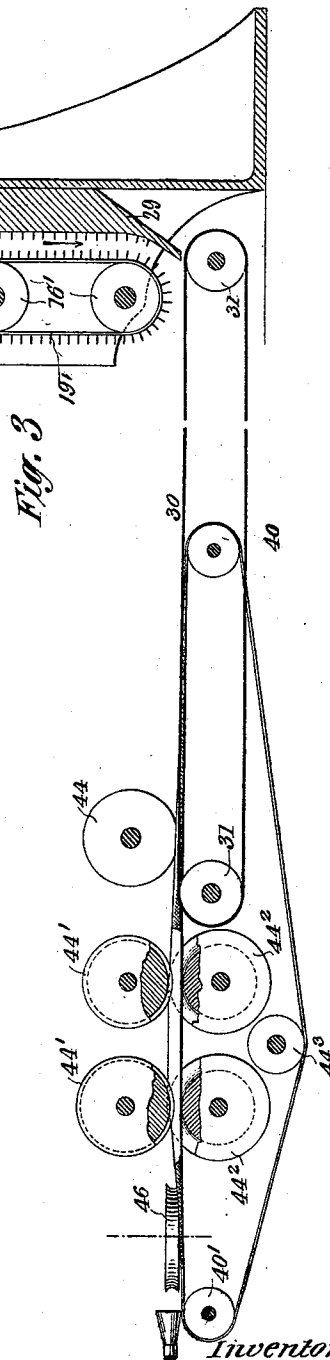
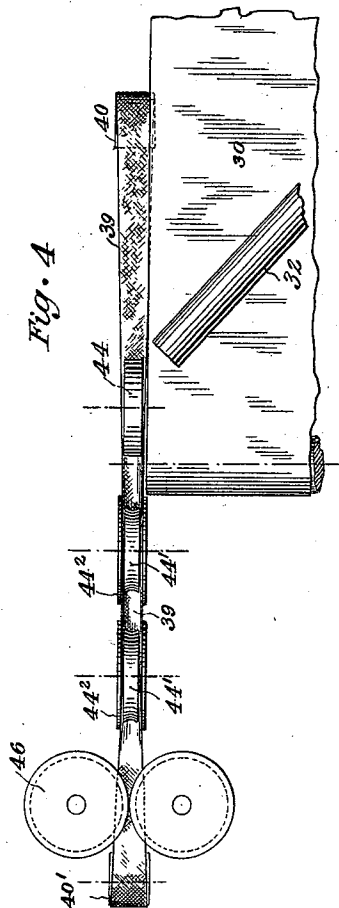
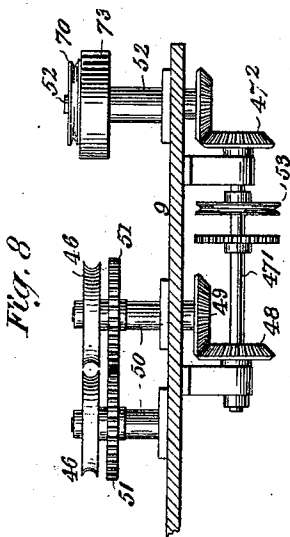
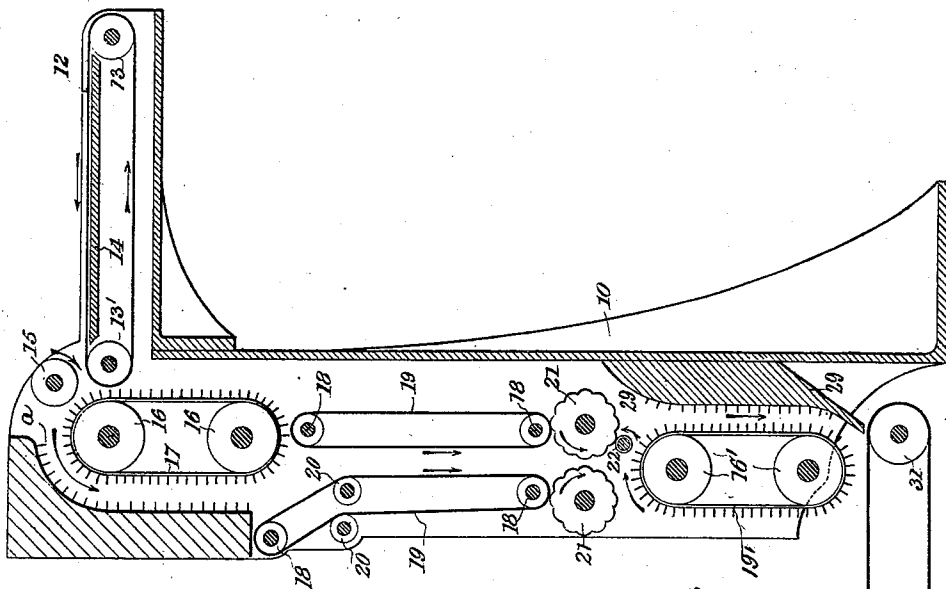
(No Model.)

4 Sheets—Sheet 3.

L. L. MAXFIELD.
CIGARETTE MACHINE.

No. 518,261.

Patented Apr. 17, 1894.



Witnesses:

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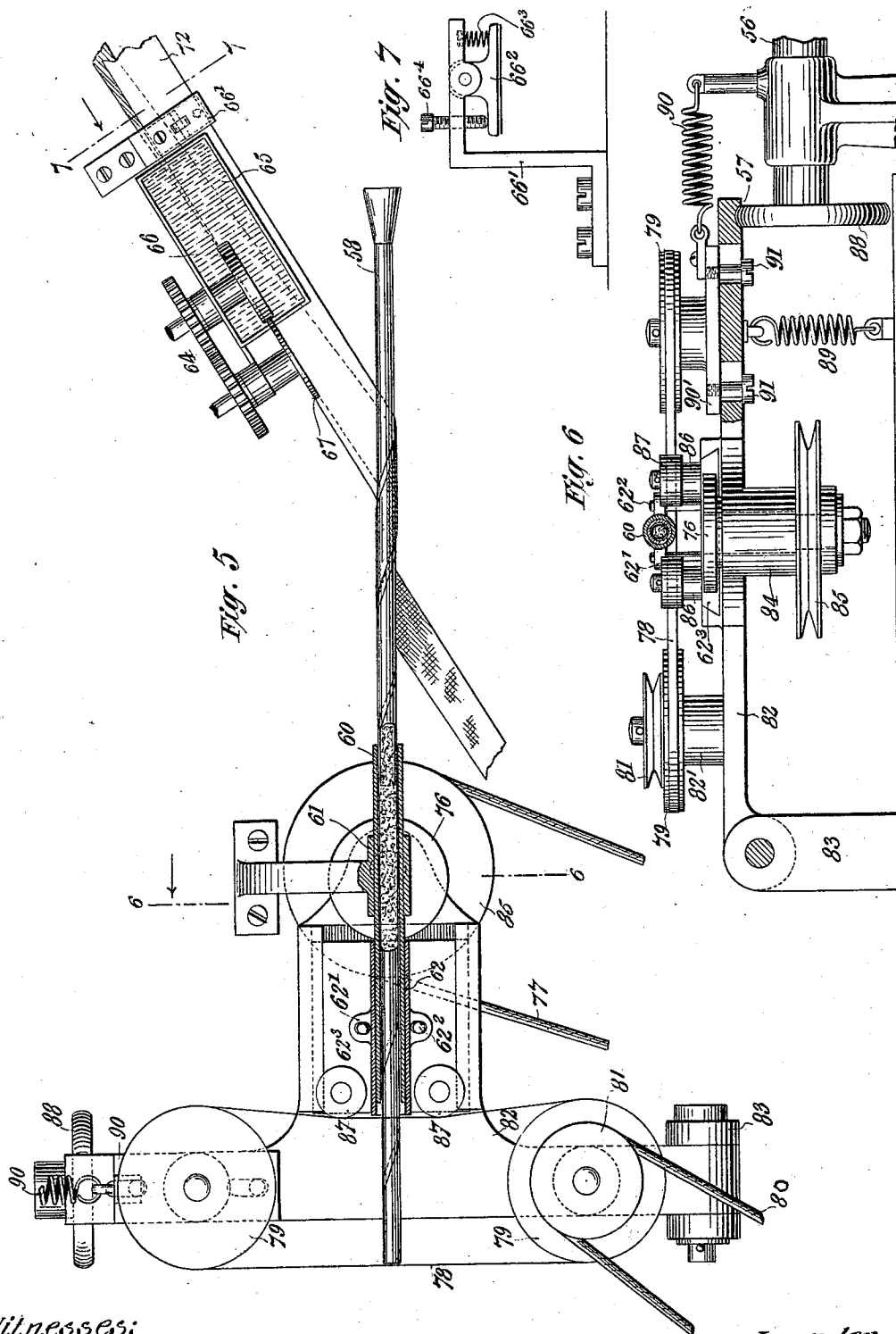
(No Model.)

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L. L. MAXFIELD.
CIGARETTE MACHINE.

No. 518,261.

Patented Apr. 17, 1894.



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UNITED STATES PATENT OFFICE.

LEVERETT L. MAXFIELD, OF BROOKLYN, NEW YORK.

CIGARETTE-MACHINE.

SPECIFICATION forming part of Letters Patent No. 518,261, dated April 17, 1894.

Application filed April 17, 1893. Serial No. 470,694. (No model.)

To all whom it may concern:

Be it known that I, LEVERETT L. MAXFIELD, a citizen of the United States, and a resident of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Cigarette-Machines, of which the following is a specification.

My invention relates to machines for the manufacture of cigarettes consisting of a filler of tobacco and a wrapper of paper; and the invention comprises means for feeding the tobacco in a properly disintegrated condition onto a conveyer arranged and operating so as to take up the tobacco and carry it along toward the former-tube in such manner that during the progress of the tobacco to said former-tube the mass thereof is automatically fashioned into such shape that it is easily entered into the former-tube when brought in contact with the endless traveling belt co-operating with said former-tube.

The invention also comprises novel means whereby the ribbon of paper is combined with the filler of tobacco and whereby the edge of the ribbon of paper is supplied with paste for maintaining the integrity of the completed cigarette.

The invention further comprises novel mechanism whereby the paper enwrapped filler of tobacco is cut off in suitable lengths automatically as it is fed from the machine in its perfected condition.

By my invention the paper wrapper is applied to the filler of tobacco spirally so that the pasted seam instead of extending longitudinally of the cigarette extends spirally around the same.

To enable those acquainted with the art to manufacture and make use of my cigarette machine I have illustrated its construction and mode of operation in the accompanying drawings and hereinafter describe the same, and in claims at the end hereof I have set forth the novel features and combinations for which I desire protection.

Referring to the accompanying drawings, wherein like parts are indicated by like numerals of reference in the several views, Figure 1 represents a plan view of the machine cut through the feeding and disintegrating devices on the line 1 1' of Fig. 2. Fig. 2 is a side-elevation of the machine. Fig. 3 shows

a central vertical section of the tobacco feeding and disintegrating mechanism and a detail showing the endless conveying apron and endless belt and pressure rollers for preparing the tobacco filler for entrance into the former-tube. Fig. 4 is a plan view of a part of Fig. 3. Fig. 5 is a detail showing a plan of the pasting mechanism, paper wrapper mechanism and devices for severing the continuous cylinder of paper enwrapped tobacco into lengths. Fig. 6 is a vertical sectional view on the line 6 6 of Fig. 5, looking in the direction of the arrow. Fig. 7 is a sectional view on the line 7 7 of Fig. 5, looking in the direction of the arrow, and Fig. 8 is a cross-section on the line 8 8 of Fig. 1.

Referring to the drawings, 9 represents the frame upon which the operating mechanism of the machine is mounted and which may be of any suitable construction. At one end of this frame there is bolted the tobacco feeding and disintegrating mechanism which is inclosed in a suitable frame 10, and 11 are the bolts which secure the frame 10 to the table.

The tobacco feeding and disintegrating mechanism comprises first an endless apron 12 arranged upon horizontally journaled rollers 13 13' in an offset at the top of the frame 10, and which is adapted to receive the tobacco to form the cigarettes, and below apron 12 is arranged a belt supporting plate 14 which supports the apron and over which it travels. The roller 15 supported in proper relative position to the roller 13' serves in connection with the apron 12 to feed the tobacco to the disintegrating mechanism arranged within the vertical case 10, which mechanism consists of a series of rollers having adjusted thereon belts, the belts located at the top and bottom of the casing 10 being provided with pins or other suitable projections adapted to take hold of the strands or bunches of tobacco and separate the same in the progress of the tobacco onto the conveying apron presently described.

More specifically the feeding and disintegrating mechanism may be described as follows: At the top of case 10 there are journaled two rollers 16 the upper one of which being in close proximity to the rollers 15, 13', and arranged to travel over these rollers 16 is a belt 17 which is provided with pins or

other projections as shown. The tobacco as it passes between the rollers 15, 13' is taken hold of by the pins of the belt 17 and carried in the direction of the arrow and passes
 5 between the pronged belt and the curved surface α in the top of the case 10 provided with pins similar to those on the belt, with the effect of disintegrating or separating the bunches of tobacco. Below the belt 17 there
 10 is arranged a series of small rollers 18 supporting endless belts 19, in such relation to each other as to provide a passage-way or conduit for the tobacco as it leaves the pronged belt 17. The small rollers 20 serve
 15 as guides for maintaining the belt with which they are in contact in proper relation to the other belt so that the tobacco will be directed between the belts. Passing between the moving belts 19 the tobacco falls onto the rollers
 20 21 whose surfaces are corrugated or channeled longitudinally and which feed the tobacco onto the pronged apron 19' arranged upon the rollers 16' at the bottom of the case 10.

25 22 is a small guide roller located in contact with one of the corrugated rollers 21 and in close proximity to the pronged apron 19' and which serves as an obstruction to the tobacco as it is carried around by the pronged apron
 30 in the direction of the arrow and thus facilitates the disintegrating process.

The various rollers of this tobacco feeding and disintegrating mechanism are driven by any suitable gearing, such for example as is
 35 shown in Fig. 2 of the drawings wherein a belt 23 from a pulley on the main shaft 24 passes around a pulley on the shaft of the upper roller 16' which is also provided with a suitable gear wheel meshing with a pinion
 40 on the small roller 22 which in turn meshes with a gear on the shaft of one of the rollers 21. The shafts of the lowermost rollers 18 are likewise provided with intermeshing gears and said rollers are also provided with pulleys.
 45 Belts 25, 26 communicate the motion of the upper roller 16' to the lowermost roller 18 at the left, and from the lowermost roller 18 at the right to the lowermost roller 16' within the top of the case 10, the shaft of
 50 which latter roller being provided with a pulley which receives a belt 27 which travels around pulley 28 fixed to the shaft of feed roller 13' and which shaft is also provided with a gear wheel meshing with a similar
 55 wheel on the shaft of the feed roller 15. The belt 23 passing from the pulley on the main shaft 24 to the uppermost roller 16' is twisted as shown in order to give the proper direction of revolution to the said roller 16', the
 60 motion of the main shaft being also communicated to the rollers of the tobacco conveying mechanism, presently described, by a belt on a pulley of said shaft. Within the bottom of the case 10 there is arranged a curved surface 29 provided with prongs similar to those
 65 on the belt 16' and which assists in preparing the tobacco for delivery onto the endless

conveying apron 30 which is arranged in a horizontal plane over the table or supporting frame 9 as shown.

70 The endless apron 30 is supported and travels on the rollers 31 suitably journaled in the frame of the table 9, and motion is communicated to said apron from the main shaft as indicated in Fig. 1. This apron 30 and the
 75 series of rollers 32 supported immediately above the apron and arranged diagonally as indicated in Fig. 1, constitutes the mechanism that conveys the tobacco to the endless belt which co-operates with the former-tube
 80 and fashions the mass of tobacco in its passage thereto into proper condition for entering said former-tube. Only one of the rollers 32 may be employed if made sufficiently long, but two or more shorter rollers are to be preferred
 85 when it is important to economize space. In the machine illustrated in drawings I have shown three of these rollers which number gives very satisfactory results. The rollers 32 are supported above and in proximity
 90 to the apron on vertical journals 33 supported in bearings bolted to the sides of frame 9, the inner ends of said rollers being supported by brackets 34 fixed to the top of the table outside of the apron and projecting
 95 over the apron, the said brackets being of requisite length to maintain the inner ends of the rollers 32 in proper position to direct the tobacco in its passage to the endless belt which co-operates with the pressure rollers
 100 and former-tube. The outer ends of rollers 32 are provided with bevel gears 32' which mesh with corresponding gears 32² on the upper ends of the vertical journals 33, and on the lower ends of said journals are fixed pulleys
 105 35 which carry the belts 36. The driving belt 37 passes around a pulley on the main shaft 24 and extends under the guide roller 38 which is journaled to the frame of the table. It is then passed around a supplemental
 110 pulley 35' on a stud of one of the vertical journals 33, and in this way the requisite motion is communicated from the main driving shaft to the series of rollers 32. The tobacco conveying apron is propelled by the
 115 main driving shaft in the direction indicated by the arrow, and the several rollers 32 by which the tobacco is formed into a proper condition during its travel with the apron, are geared to revolve in the direction indicated
 120 by the arrows, and being arranged diagonally to the width of the apron they serve, while obstructing the movement of the mass of tobacco upon the apron, to gather up the tobacco in opposition to the movement of the
 125 apron and arrange it in proper condition along the length of the rollers and direct it in this form to the endless belt beneath the compressing rollers in advance of the former-tube.

130 The endless belt 39 travels over pulleys 40 40', the former fixed upon the shaft 41 and the latter in brackets 42. This belt is driven from the main shaft 24 by a chain belt 43 for

example, which travels over pulleys on the main shaft and on shaft 41 as indicated. Journaled in brackets to the top of the table is a series of rollers 44 44'. There may be 5 any desirable number of these rollers, three of them being shown in this example of my machine, and they are arranged over the endless apron 39 in contact therewith. The roller 44 of this series is preferably flangeless while 10 rollers 44' are provided with flanges forming grooves on their peripheries as indicated. Beneath the rollers 44' there are arranged correspondingly grooved rollers 44² with comparatively deep grooves and in which grooves 15 the endless belt 39 travels with the effect of forming a trough of the moving belt into which the tobacco is compressed by the superimposed grooved rollers 44'. The guide roller 44³ for the endless belt is journaled to the table beneath the rollers 44² as indicated in Fig. 3.

As the tobacco leaves the conveying apron 30 it passes onto the endless belt 39, beneath the first roller 44 which is flangeless and 25 which compresses the tobacco onto the belt, and forces it forward with the travel of the belt beneath the flanged rollers 44' successively, and which compress the mass of traveling tobacco between the flanges of said 30 rollers and the flanges of the lower rollers 44², thus serving to increase the density of the traveling mass of tobacco and prepare it for entrance into the former-tube. The compressing rollers 44 and 44' are revolved 35 indirectly from the main shaft as indicated in Fig. 1, the chain belt 43 giving motion to shaft 41, and the belts 45 which travel around pulleys on the shaft 41 and on the respective journals of the compressing rollers serving to 40 drive the said rollers in an obvious manner. The requisite direction of motion is given to the first of the compressing rollers 44 by twisting the belt 45, the said roller revolving of course in a direction opposite to the revolution of the journal 41 by which the endless 45 belt 39 is caused to travel.

Immediately in advance of the rollers 44' which are arranged vertically there is arranged horizontally a pair of rollers 46 supported on spindles and between which the 50 endless belt 39 travels. Said rollers 46 are grooved as indicated in Fig. 3 and being arranged in close proximity to each other the roll of tobacco is thereby finally compressed after leaving the rollers 44', 44², and immediately before entering the former-tube. Motion is communicated to the rollers 46 by means of the sprocket chain 47—passing from a pulley on shaft 41 to a sprocket wheel on the laterally extended shaft 47', the inner end of said shaft being provided with a bevel gear 48 which meshes with a similar gear 49 on the 60 end of the shaft 50 which carries the gear wheel 51 and serves also as a journal for one of the grooved wheels 46. The journal of the other grooved wheel 46 also carries a gear wheel 51 which meshes with the first men-

tioned gear wheel 51. It is thus the motion is communicated to the said wheels 46. On the opposite end of shaft 47' there is fixed 70 a beveled gear 47² which meshes with a corresponding gear on the lower end of a vertically arranged shaft 52 at the upper end of which shaft there are secured pulleys for the belts which give motion to the paper feeding 75 and pasting mechanism. The said shaft 47' is also provided with pulley 53 around which belt 54 extends to a pulley 55 on the end of the shaft 56 which carries the cam 57 which co-operates with the cutting mechanism as 80 hereinafter explained.

The former-tube is indicated by 58 and it is provided with a bell-shaped mouth as shown and rests upon the support 59 as best shown in Fig. 2 of the drawings. The inner bell 85 mouthed end of this tube is in contact with the endless belt 39 and in close proximity to the rollers 46 and receives the roll of compressed tobacco as it emerges from between said rollers 46. The outer end of this former- 90 tube 58 enters the tube 60 for a short distance as shown in Fig. 5, which tube 60 is supported in bracket 61 by which it is held stationary; and is sufficiently long to permit it to enter for a considerable distance of its length 95 a short tube 62 which is provided with the side lugs 62' through which pass the guide pins 62² secured in the top surface of the plate 62³ which plate having a dovetail connection with the support of the cutting mechanism is adapted to slide outward when acted 100 upon by the eccentric 76 as hereinafter explained. The pins 62² being fixed in plate 62³ serve, by means of the lugs 62' provided on the short tube 62, to connect said short tube 105 to the plate 62³, and thus the short tube 62 will be carried forward against the cutting band or knife as the plate 62³ is acted upon by the eccentric 76. As the cutting mechanism is raised by cam 88, and lowered, the pins 110 62² play vertically through the lugs 62'. If the short tube 62 were not present when the plate 62³ is moved forward by the eccentric 76 the cigarette would be broken down when the knife came into operation since the cigarette would have no support. As the short 115 tube 62 is forced forward with the movement of the plate 62³, over and in advance of the traveling tobacco-filled paper tube, the end of said tube 62 holds the cigarette rigidly 120 while the cutting operation takes place and serves also as a shearing surface for the cutting knife.

The reel carrying the paper for forming the wrapper of the cigarette is secured to the 125 table in suitable relation to the former-tube 58 and is indicated in the drawings by 63. In suitable proximity to the forming-tube 58 and the paper reel there is located the pasting mechanism 64.

The pasting mechanism consists of the 130 trough 65 for containing the paste and a roll 66 revolving in the paste and the narrower roll 67 revolving outside of the paste trough

but in contact with the roll within the trough, whereby the paste roll supplies paste to roll 67 beneath which the ribbon or paper from the reel travels and the edge of which is supplied with paste by said roll 67 in an obvious manner. Bolted to the table in the rear of the pasting trough is a bracket 66' provided with an overhanging arm to which is pivoted a device for adjusting the ribbon of paper with regard to the pasting wheel 67. This device comprises a pivoted arm 66² beneath which the paper travels and by which it is so adjusted as to bring more or less of its edge in contact with the pasting wheel 67. One end of the arm 66² is connected with a spring 66³ which is also connected to the bracket and which spring serves in conjunction with the thumb screw 66⁴ to hold the arm 66² in the position to which it is adjusted. The shafts of the rolls of the pasting mechanism are provided with gear wheels which intermesh and one of the said shafts is provided with a pulley 68 over which extends a belt 69 which passes also to a pulley 70 on the end of the vertical shaft 52 (see Figs. 1 and 8). Guide roll 71 for belt 69 is fixed to the table in the position shown. The ribbon of paper indicated by 72, after leaving the pasting mechanism is wrapped spirally around the former-tube 58 and is fed into tube 60 by the endless belt 58' which is also wrapped spirally around the former-tube 58 over the spirally wrapped paper. The belt 58' is driven by a pulley 73 on shaft 52 and extends around pulley 74 on the vertical shaft 75. The said shaft 75 likewise carries the pulley for the belt 77 which operates eccentric 76 by which a sliding movement is given to carrier plate 62³ when in the operation of the machine it becomes necessary to advance the carrier of the tube 62, which is fixed to said carrier, to permit the cutter to sever the cigarette without retarding its passage.

The cutter is indicated by 78 and is mounted upon pulleys or wheels 79 and it consists of an endless steel band sharpened on both edges as indicated in Fig. 5. Movement is communicated to this cutter by a belt 80 passing around a pulley 80' on shaft 75 and around pulley 81 on the spindle or support for one of the wheels 79. The support 82 of the cutting mechanism is hinged to post 83 as shown in Fig. 6 and upon this support is mounted the journals 82' of the wheels 79 around which the cutter 78 travels. Depending below support 82 centrally is a stud 84 which carries the pulley 85 around which the belt 77 passes and by which the requisite motion is communicated to the eccentric 76 which operates at proper intervals, as stated, the carrier of the tube 62. The support 82 is lifted by the cam 88 fixed to the shaft 56, against the tension of the coiled spring 89 connected at one end to the table and at its other end to the under side of said support 82, the spring depressing the support after the cam 88 ceases to act on it. A cigarette is cut with both upward and

downward movements of the knife support. When the knife support 82 is in either of its extreme positions it does not obstruct the passage of the traveling cigarette. The necessary tension is furnished to the cutter by means of the spiral spring 90 secured at one end to the standard for the shaft of cam 88 and at its other end to the movable base piece 90' of the stud of one of the pulleys 79. The support 82 is slotted immediately below said base piece 90' through which slot pins 91 project from the underside of base piece 90', the slots being of sufficient size to permit the spring to keep the knife normally taut and to permit the flexing of the knife when it is acted upon by the carrier of tube 62. To the top of the carrier 62³ and near its front end there are fixed two short studs 86, which are provided with rolls 87 which bear against the knife 78 when the eccentric 76 forces the carrier 62³ forward, the rolls serving as guides for the knife to insure its accurate cutting.

In the operation of this machine the tobacco is placed upon the apron 12 in the offset at the top of the vertical case 10, and is fed between the rollers 15 13' onto the revolving pronged belt 17. The prongs of the belt seize the tobacco and carry it around in the direction of the arrow and in its passage through the channel between the pronged belt 17 and the curved inner surface of the case 10, which is also provided with pins or prongs as shown, there is a separation of the particles of tobacco as it falls into the passage-way between the belts 19 and onto the rollers 21 at the bottom of said passage-way, from which it is delivered onto the pronged belt 19' which revolving in the direction of the arrows conveys the tobacco to the conveying apron 30. In its passage from the rollers 21 to the conveying apron 30 the tobacco is further comminuted by the pins or prongs on apron 19' and on the guide piece 29. The tobacco falling onto the conveying apron 30 is carried along by the movement of the apron in contact with the first preparing roller 32 which revolving in the direction of the arrow obstructs the passage of the tobacco and causes it to form itself along the length of the roller and by the revolution of the roller is given a revolving motion while being forced along toward the inner end of the roller from which it is conveyed to the next succeeding roller and so on to the inner end of the last roller of the series—or where one long roller only is employed to the inner end of said roller—where it is delivered onto the endless belt 39 beneath the pressure roller 44. When the mass of tobacco reaches this point it has been rolled up into a comparatively compact mass and in this form is carried along by the endless belt 39 beneath the pressure rollers 44' and between the pressure rollers 46 into the former-tube 58. The pressure rollers are adapted to compress the tobacco into sufficiently small dimensions to permit it to pass through the former-tube

easily, but when the traveling mass of tobacco leaves the former-tube and is combined with the paper wrapper within the tube 60, the diameter of which is larger than that of the former-tube, the tobacco will expand and snugly fill the spirally formed paper wrapper as it is fed out from the former-tube.

The ribbon of paper is conducted from the reel 63 beneath the trough of the pasting devices, one of its edges being supplied with paste by the pasting wheel 67, and the end of the paper ribbon is wound spirally upon the stationary former-tube 58. The paper is fed forward over this former-tube by means of the belt 58' which is wrapped around the former-tube spirally on top of the paper. The movement of the belt when thus connected with the former-tube propels the spirally wrapped paper along the tube and feeds the spirally wrapped paper tube from the former-tube 58 into the stationary tube 60, the mass of tobacco emerging from the former-tube 58 is therein combined within the tube 60 with paper tube, the passage of the mass of tobacco into said paper tube offering no difficulty since the diameter of the paper tube is greater than that of the mass of tobacco, which latter however expands within the paper tube and is thus snugly combined therewith. The tube of paper encased tobacco is fed continuously from the stationary tube 60 and is cut off in suitable lengths by the cutting mechanism illustrated in Figs. 5 and 6. This mechanism comprises a knife which is a continuous band sharpened on both edges and adapted to revolve upon the wheels or pulleys mounted upon the support for the cutting mechanism, and it is operated so as to sever a length of the continuously fed cigarette tube at each upward and downward movement, the knife support being pivoted at one end and adapted to be operated upon by the lifting cam 88 at the other end so as to give to the knife the necessary up and down movement which is effected at proper intervals of time. There is a tension device for the knife whereby it is held sufficiently taut to operate as desired and whereby it may be flexed slightly when the carrier 62³ is moved forward through the medium of the cam 76.

The operation of the machine is automatic in all respects and the product is in every respect a satisfactorily made cigarette.

The capacity of the machine is not less than one hundred and twenty-five thousand for a full day's work of ten hours.

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

1. In a cigarette machine, the combination with a former-tube and means for conveying thereto a continuous charge of tobacco, of a belt wrapped spirally around said tube, whereby the paper is formed into a spiral tube on the former-tube, substantially as set forth.

2. In a cigarette machine, the combination with a former-tube supported stationary over a table means for conveying thereto a continuous charge of tobacco and a second tube of sufficient diameter to permit the end of said former-tube to be entered therein, of a driven belt wrapped spirally around said former-tube, whereby the paper is formed into a spiral tube on the former-tube and is propelled over the former-tube and into the tube into which the end of the former-tube extends, substantially as set forth.

3. In a cigarette machine, the combination with a former-tube supported stationary over a table and means for conveying thereto a continuous charge of tobacco and a second tube of such diameter as to permit the end of the former-tube to be entered therein, of a driven belt wrapped spirally around the former-tube and a short tube supported upon a movable part of the cutting mechanism and adapted to be forced forward at proper intervals over the traveling tobacco-filled paper tube, substantially as set forth.

4. In a cigarette machine, the combination with the tobacco feeding and compressing mechanism and a former-tube supported stationary over a table and adapted to receive the tobacco filler from the pressure mechanism, of another tube of diameter sufficient to permit the former-tube to enter the same and a driven belt wrapped spirally around the former-tube and adapted to propel the paper over said tube, substantially as set forth.

5. In a cigarette machine, the combination with the feeding roller as 15 and belt 12, and a belt provided with nails or prongs and moving in a vertical plane in proximity to said feeding roller, of a concaved surface also provided with prongs and arranged in proximity to said pronged traveling belt and a pair of belts arranged beneath said vertical traveling pronged belt and also traveling in a substantially vertical plane and arranged a sufficient distance apart to provide a passage or conduit for the disintegrated tobacco, substantially as set forth.

6. In a cigarette machine, the combination with a horizontally traveling belt upon which the tobacco is placed to be fed into the machine, a feed roller which takes up the tobacco from the belt, an endless belt provided with prongs which receives the tobacco from the feed roller a concaved surface in proximity to said pronged belt and endless belts traveling in a substantially vertical plane and providing a passage-way into which the tobacco falls from the pronged belt, of a second pronged belt arranged beneath said passage-way and operating to convey the tobacco in proper condition onto the traveling apron, and a curved surface arranged in proximity to said last mentioned pronged belt, substantially as set forth.

7. In a cigarette machine, the combination with the endless belt 12, a feed roller cooperating with said belt to convey the tobacco

to the feeding and disintegrating mechanism, a pronged belt in proximity to said feed roller, a prolonged concaved surface in proximity to said belt, belts traveling in a vertical plane beneath said pronged belt and providing between them a passage-way for the tobacco, of guide rollers located at the bottom of said passage-way and a pronged belt traveling in a vertical plane beneath said guide rollers, substantially as set forth.

8. In a cigarette machine, the combination with an endless traveling apron which receives the tobacco from the feeding and disintegrating mechanism and conveys it forward, of a tobacco shaping roller supported diagonally upon the apron and geared to revolve in a direction reverse to the travel of the apron, whereby the tobacco as it is deposited upon the apron is obstructed and is formed in a mass along the length of the roller, while being propelled forward to the end of the said roller which is adapted to deliver it at the proper point of exit, substantially as set forth.

9. In a cigarette machine, an endless traveling apron and rollers supported upon said apron and arranged diagonally of its width and in opposite directions and geared to revolve in a direction reverse to the travel of the apron, and serving to obstruct the passage of the tobacco and arrange it in a continuous mass along the lengths of the rollers, which in conjunction with the moving apron propel the tobacco forward to the point of exit from the apron, substantially as set forth.

10. In a cigarette machine, the combination with a suitable table and an endless traveling apron adjusted thereon, of a series of preparing rollers arranged diagonally over and upon the apron and in opposite directions, and revolving reversely to the travel of the apron, and provided on their outer ends with gears, brackets fixed to the table and supporting the inner ends of the rollers in proper position over the apron, and vertical journals operating in bearings fixed to the table and provided with gears on their upper ends cooperating with the gears on the outer ends of said rollers and provided at their lower ends with means to receive the gearing by which motion is communicated to said journals, substantially as set forth.

11. In a cigarette machine, the combination with a table and an endless apron supported thereon and operated from the main shaft of the machine, of a series of preparing rollers arranged diagonally over and upon the apron and in opposite directions and geared to vertical journals operating in bearings fixed to the table, which journals are provided at their lower ends with pulleys, a belt communicating the motion of the main shaft to one of said vertically arranged journals and connecting belts between the pulleys on the several journals, substantially as set forth.

12. In a cigarette machine, mechanism for compressing the mass of tobacco received

from the conveying apron and feeding it forward to the former-tube, consisting of an endless belt mounted on pulleys and propelled indirectly from the main shaft and a series of pressure rollers beneath which the endless belt travels, the first of said rollers being flangeless and the others of the series arranged in pairs one above the other and having flanges, the final pair of rollers supported on vertical spindles and giving the final pressure to the filler of tobacco before entrance thereof into the former-tube, substantially as set forth.

13. In a cigarette machine, the combination with the former-tube and its operating belt wrapped spirally thereupon, of a pasting mechanism mounted on the table in proximity to said former-tube at an incline thereto, and a reel for the paper ribbon likewise mounted in suitable proximity to the pasting mechanism, the paper ribbon extending from the reel beneath the paste trough with its surface in appropriate contact with the paste wheel and with its free end wrapped spirally around the former-tube beneath the belt, substantially as set forth.

14. In a cigarette machine, the combination with a former-tube, of the pasting mechanism arranged in proximity thereto, a paper reel arranged in proper relation to the pasting mechanism, and at an incline to the former tube, the paper ribbon extending beneath the paste trough with its surface in contact with the paste wheel, and an adjusting device, as 66', secured to the pasting mechanism and comprising a pivoted arm, as 66², which is adjusted by a set screw to bear upon the paper beneath which it travels to maintain the paper in proper relation to the pasting wheel, substantially as set forth.

15. In a cigarette machine, the combination with the delivery mechanism, of mechanism for cutting the continuous cigarette into suitable lengths, consisting of a continuous band-knife mounted upon wheels or pulleys and adapted to be continuously propelled, and means for raising and lowering the cutter at suitable intervals, substantially as set forth.

16. In a cigarette machine, a cutting mechanism mounted upon a hinged support in front of the delivery mechanism and comprising an endless band-knife sharpened on both edges and adapted to revolve on pulleys mounted on said support, and a cam cooperating with the outer end of said cutter-support to raise and lower the same at proper intervals, substantially as set forth.

17. In a cigarette machine, the combination with an endless band-knife and a support for the pulleys around which said knife travels, of a tube mounted upon a carrier which is connected to the cutter-support to slide thereon, said tube encircling the delivery tube of the machine, and an eccentric adapted to move said tube carrier forward toward the endless band-knife to advance the tube of the carrier beyond the end of the delivery

tube at proper intervals, substantially as set forth.

18. In a cigarette machine, the combination with the cutter-support 82 provided with pulleys and an endless band-knife adapted to revolve around said pulleys, of a tube 62 mounted on guide pins in carrier 62³, rollers, as 67, adapted to cooperate with the endless band-knife when the carrier is moved forward and

an eccentric, as 76, cooperating with said carrier, substantially as set forth.

Signed at New York, in the county of New York and State of New York, this 15th day of March, A. D. 1893.

LEVERETT L. MAXFIELD.

Witnesses:

J. F. M. BOWEN,
M. C. PINCKNEY.