

No. 685,140.

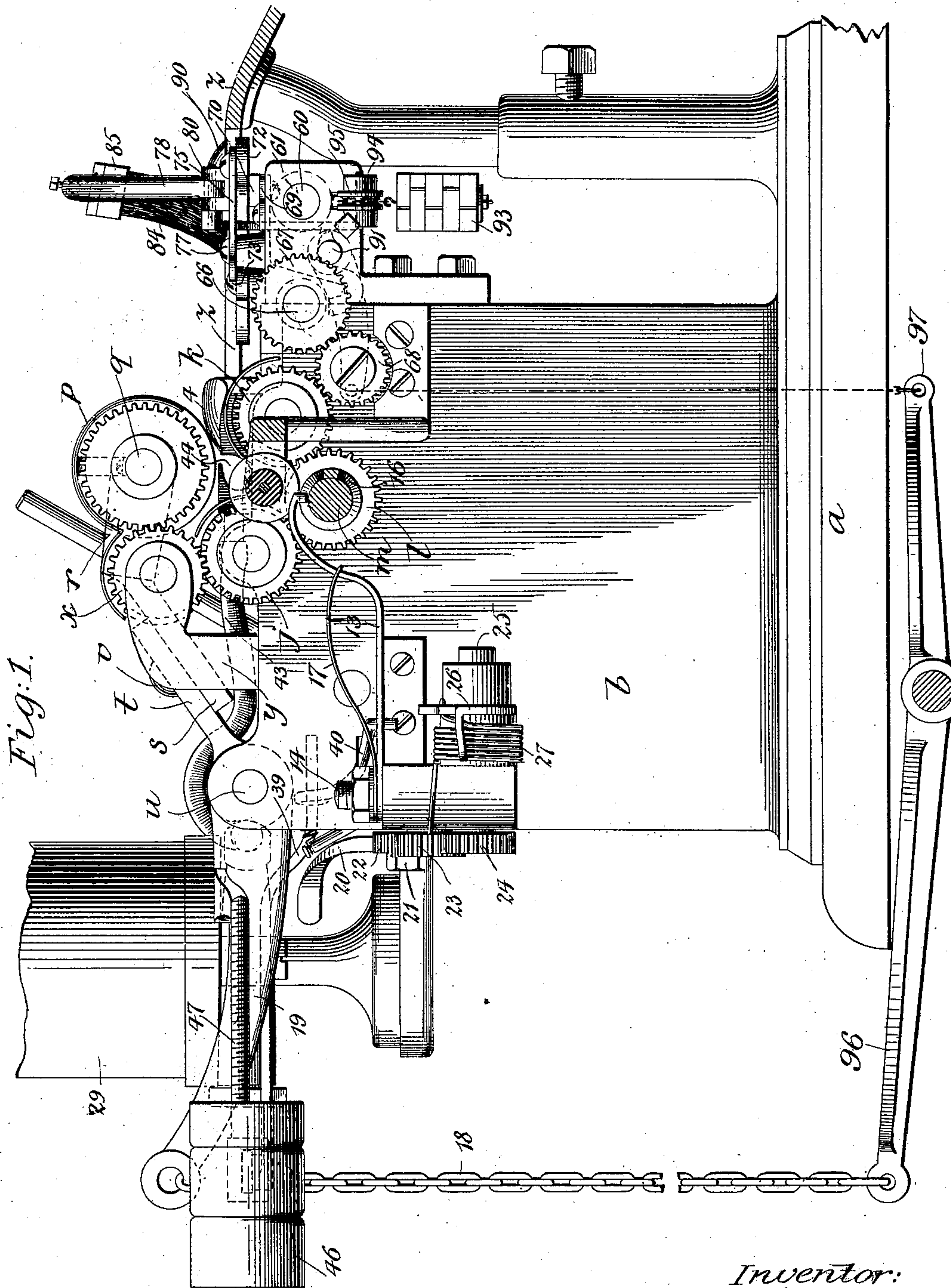
Patented Oct. 22, 1901.

F. L. HERRINGTON.  
CIGAR BUNCH WRAPPING MACHINE.

(Application filed Mar. 25, 1901.)

(No Model.)

4 Sheets—Sheet 1.



Witnesses:  
John A. Rennie  
Henry Thieme

Inventor:  
Florence L. Herrington  
By Brown & Deard  
his Attorneys

**No. 685,140.**

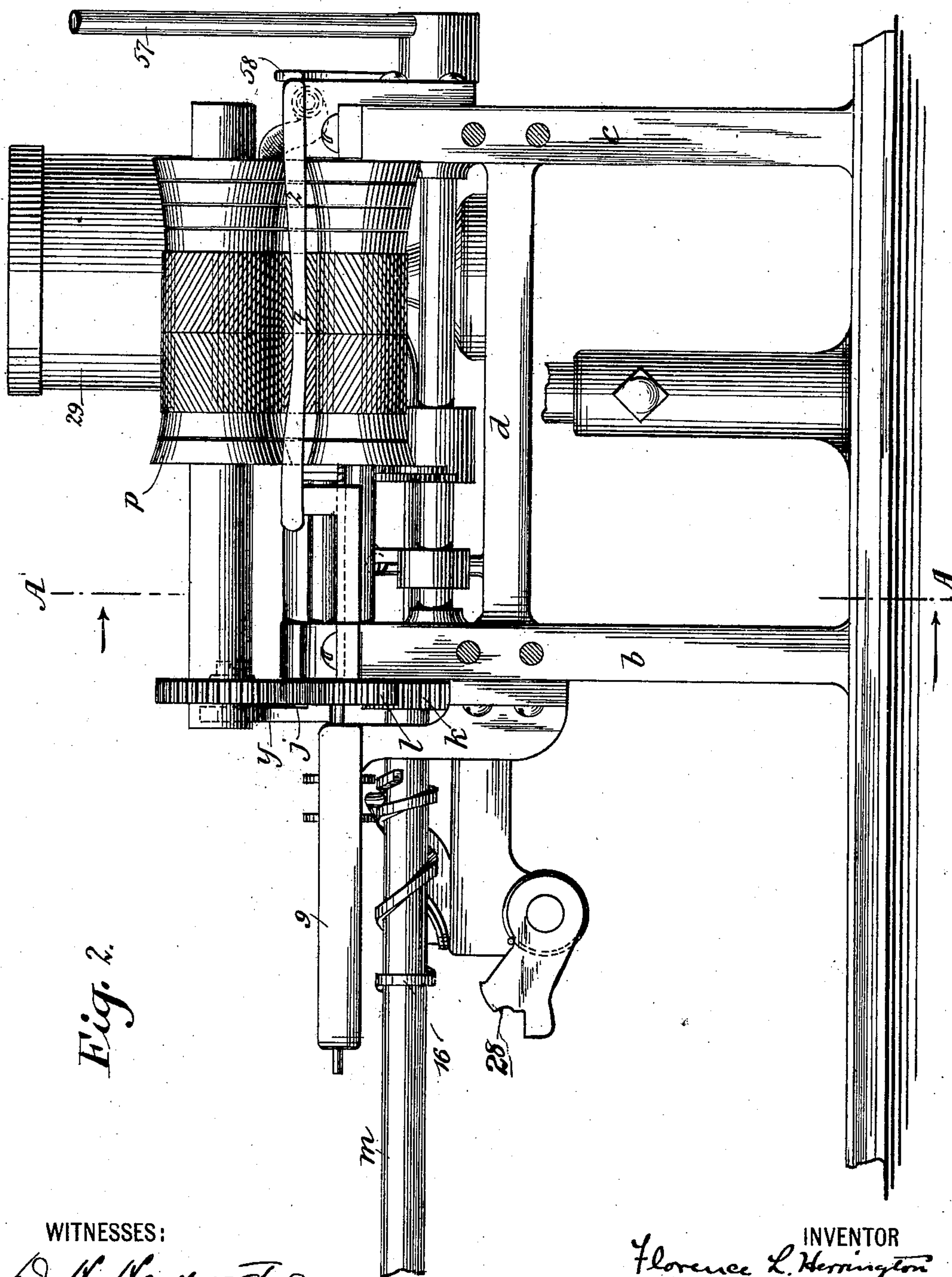
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**4 Sheets—Sheet 2.**



**WITNESSES:**

D. N. Maybourn.  
John A. Rennie

INVENTOR  
Florence L. Harrington  
BY *Brown & Wood*  
his ATTORNEYS



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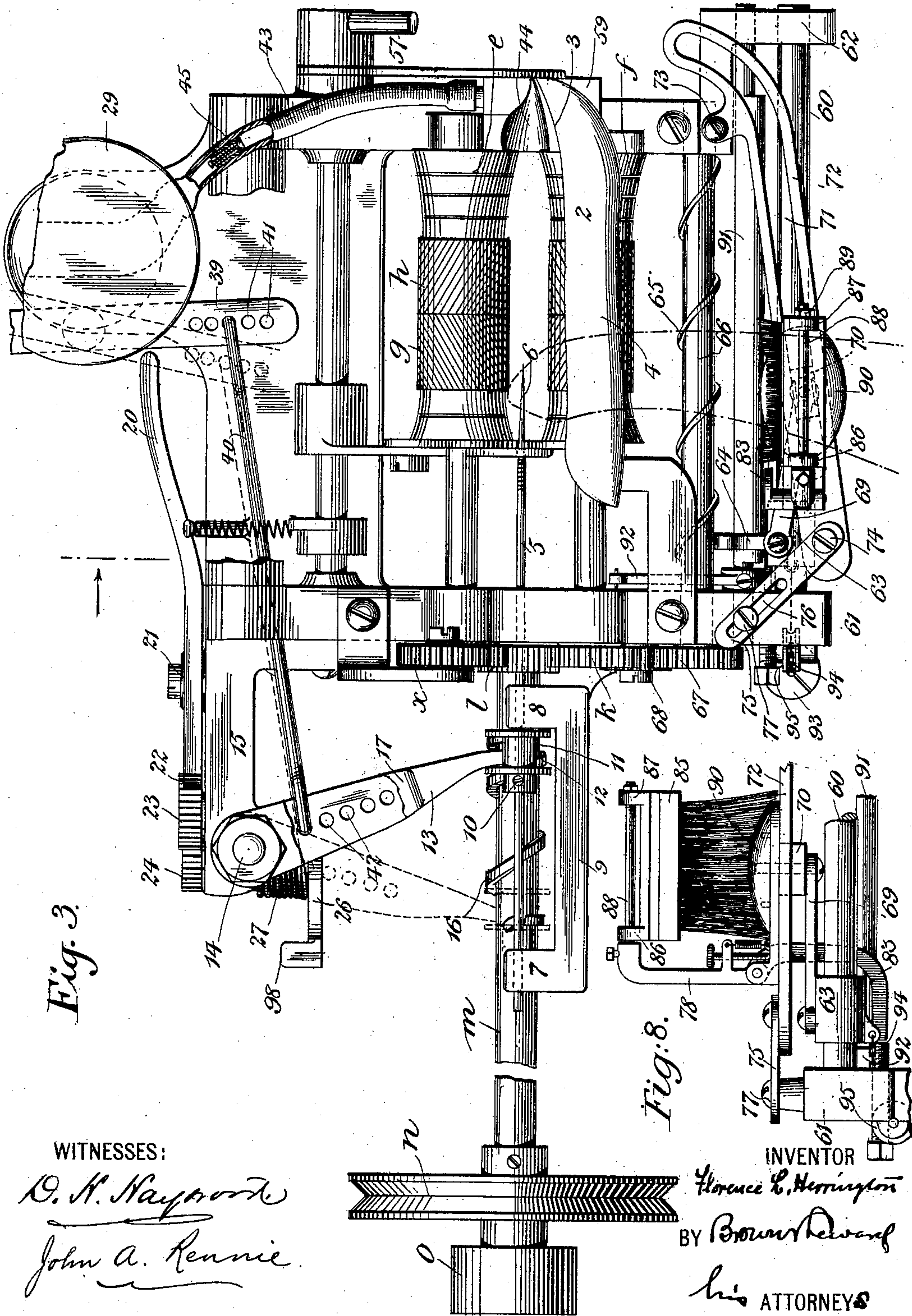


Fig. 3.

Fig. 8.

WITNESSES:

*D. H. Haywood*  
*John A. Rennie*

INVENTOR

*Florence L. Herrington*  
BY *Brown & Howard*  
his ATTORNEYS

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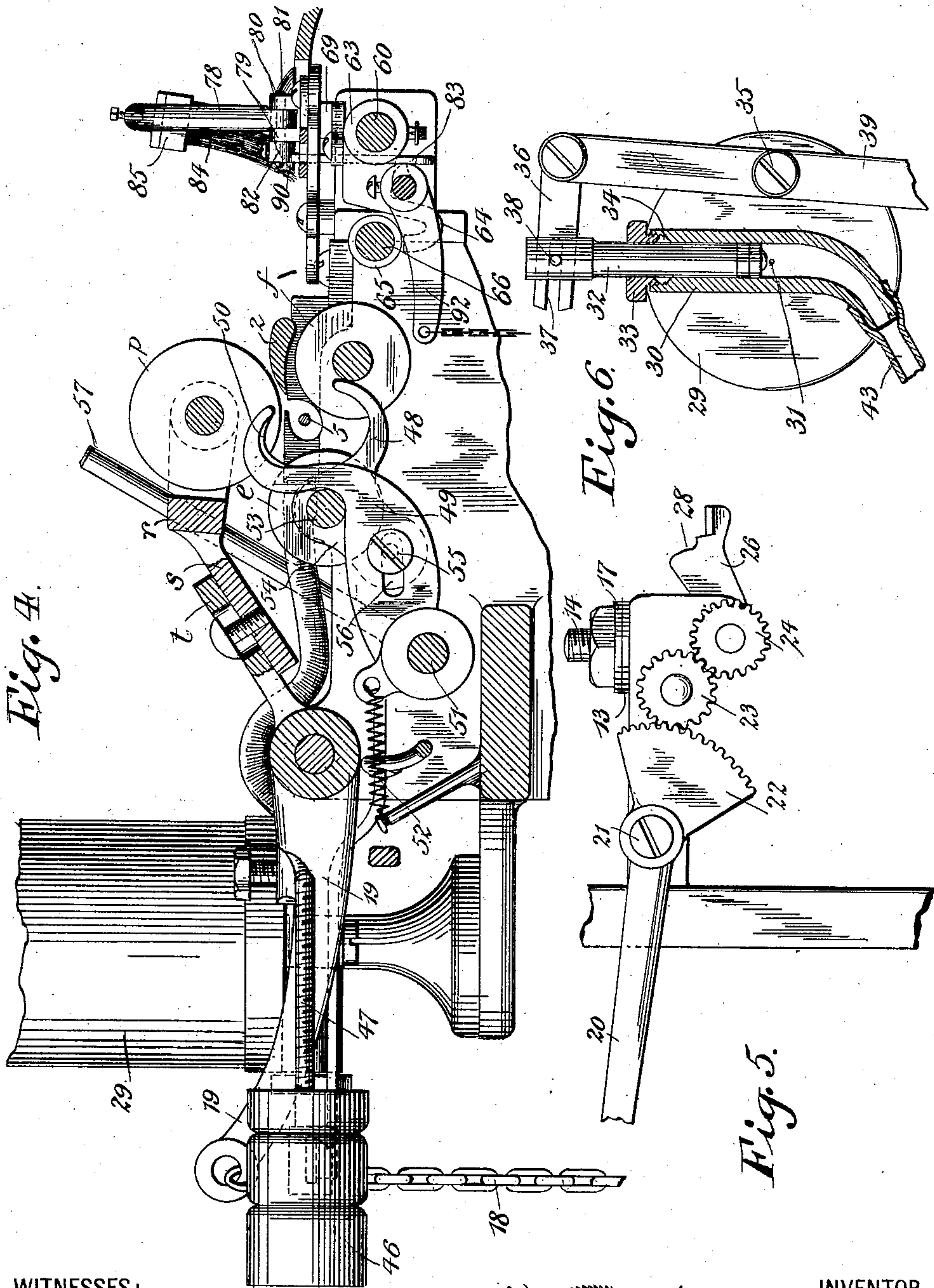


Fig. 4.

Fig. 6.

Fig. 5.

Fig. 7.

WITNESSES:

*D. H. Maynard,*  
*John A. Rennie*

INVENTOR  
*Florence L. Herrington*  
BY *Brown & Howard*  
his ATTORNEYS



# UNITED STATES PATENT OFFICE.

FLORENCE L. HERRINGTON, OF NEW YORK, N. Y., ASSIGNOR TO DAVID  
BUCHNER, OF NEW YORK, N. Y.

## CIGAR-BUNCH-WRAPPING MACHINE.

SPECIFICATION forming part of Letters Patent No. 685,140, dated October 22, 1901.

Application filed March 25, 1901. Serial No. 52,867. (No model.)

*To all whom it may concern:*

Be it known that I, FLORENCE L. HERRINGTON, a citizen of the United States, and a resident of the borough of Manhattan, in the city and State of New York, have invented a new and useful Cigar-Wrapping Machine, of which the following is a specification.

My invention relates to a cigar-bunch-wrapping machine, and more particularly to a machine for winding the outside wrapper on a cigar-bunch for the purpose of completing it as either a cigar or cheroot, as may be found desirable.

A practical embodiment of my invention is represented in the accompanying drawings, in which—

Figure 1 is a view of the machine in end elevation, the top of the gum-tank and the outer portion of the table being omitted to show the coacting parts of the machine on a larger scale and the drive-shaft and support for the reciprocating wrapper-bearing needle being shown in section. Fig. 2 is a view in front elevation, the table and delivery mechanism being removed to show the operating parts to the rear of it more clearly, the outer end of the drive-shaft being omitted. Fig. 3 is a top plan view with the vertically-swinging roller and its supporting-frame removed. Fig. 4 is a vertical section from front to rear in the plane of the line A A of Fig. 2 looking as the sheet is held for reading. Fig. 5 is a view in detail, showing in rear elevation the means under the control of the foot-lever for returning the needle-bearing into position to receive the end of the wrapper. Fig. 6 is a view in detail, partly in section, showing the means for forcing the gum from the supply-tank to the finishing-tip of the cigar-wrapper. Fig. 7 is a fragment in transverse section, showing the form of the teeth on the gripping-surfaces of the rollers; and Fig. 8 is a partial front view of the wrapper-delivering mechanism.

The supporting-frame of the machine conveniently comprises a base-plate or pedestal *a*, surmounted by upright side plates *b c*, in turn connected by a cross-piece *d*. The size of the base-plate and the height of the upright plates and their distance apart are determined

by the required spacing and arranging of the different operative parts which coact to produce the wrapping of the bunch, and it is assumed that the machine is to be supported as a whole upon a bench or other convenient primary support to bring the machine to the proper height to be manipulated conveniently by the operator, either sitting or standing in front of it, as may be desired.

Two lower rollers (denoted as a whole by *e f*) are arranged between the sides *b c* of the supporting-frame and spaced a little distance apart to serve as a rest for the cigar-bunch about which the wrapper is to be placed. They are made concave from their opposite ends toward their central portions, the central portions being provided with gripping-faces, as follows: Each of the gripping-faces is preferably divided into two annular sections, (denoted by *g* and *h*,) the teeth on the said surfaces extending in a diagonal direction across the surface and the diagonal arrangement being the opposite on the one section—as, for example, *h*—from that which it assumes on the other section *g*. This reversal of the direction of the teeth prevents the bunch and wrapper from creeping longitudinally out of position, the simultaneous action of the reversed series of teeth serving to hold the bunch centered, and hence a smooth laying of the wrapper thereon. In addition to this the teeth (denoted by *i*, Fig. 7) are given a pitch in the same direction after the manner of file or ratchet teeth, so that they will effect a gripping hold upon the wrapper and bunch to insure the positive rotary movement of the bunch to roll the wrapper thereon. The teeth being long and at the same time having a set in one direction, the secure grip is effected without danger of tearing the wrapper. The two rolls are similarly provided with gripping-faces, and their shafts extend through the side frame *b* and are provided on their ends exterior to the side frame *b* with gear-wheels *j k*, which intermesh with a common drive-wheel *l* on the drive-shaft *m*. The drive-shaft *m* is mounted at one end in the side frame *b* and at its opposite end in a suitable support (not shown) and is provided with a suitable drive-pulley *n* and clutch



mechanism *o* for clutching the pulley to and from the shaft at pleasure to cause the shaft *m* to rotate and stop, as may be desired.

The means under the control of the operator for starting and stopping the drive-shaft *m* are not shown and may be of any well-known or approved form.

The top roll for engaging the bunch and for rotating simultaneously with the rolls *e* and *f* is denoted by *p* and is preferably somewhat larger, but of the same general shape and provided in the same general manner with gripping-surfaces as that shown and described with reference to the lower rollers *e* and *f*. This upper roll *p* is carried by a shaft *q*, mounted in the forwardly-extending arms of a yoke *r*, the said yoke being provided with a tailpiece *s*, adjustably secured to a forwardly-extending plate *t*, fixed to a rock-shaft *u*, mounted in the side frames *b c* at their rear upper portions. The connection of the tailpiece *s* with the plate *t* on the rock-shaft *u* is conveniently effected by means of binding-screws *v*, which extend through elongated slots *w* in the plate *t* and into the tailpiece *s* to lock it in the desired adjustment relative to the plate *t* for the purpose of lowering the roller *p* into the proper relation to the rollers *e* and *f* and at the same time into mesh with an intermediate gear-wheel *x*, mounted in a bracket *y*, for transmitting motion from the gear-wheel *j* to the roller *p* to cause the latter to rotate in the same direction as the rollers *e* and *f*.

When it is desired to throw the roller *p* out of action, it may be swung on the rock-shaft *u* over to the rear out of mesh with the intermediate gear *x*, the roller *p* rotating to accommodate itself to the gear *x* until the teeth are freed, and when desired to put it into operation again it may be swung forward into the position shown in Fig. 1 into mesh with the intermediate gear *x*.

The wrapper to be wound on the bunch (indicated in dotted lines, Fig. 3) passes from a delivery mechanism, which will be hereinafter more particularly described, or from the table *z*, when no delivery mechanism is employed, over a rest 2, fixed in position over the roller *f*, and having its inner edge 3 curved in a horizontal plane, as represented in Fig. 3, and its central portion 4 depressed, as shown in Fig. 2.

When the wrapper is first laid in position, its end is laid over a longitudinally-reciprocating bearing needle or shaft 5, the free end of which is preferably pointed, as at 6, and arranged to project normally between the ends of the rollers *e* and *f* at the ends where the rolling operation begins. The shaft 5 has bearings in the arms 7 and 8 of a bifurcated bracket 9, supported from the side *b* of the frame. The said shaft has fixed thereon a collar 10, provided with an annular recess 11, in which the tip 12 of an operating-arm 13 rests for the purpose of sliding the shaft 5 longitudinally to bring the point 6 out of

the field between the rollers *e*, *f*, and *p* as soon as the rolling operation begins and to return the said point into position to sustain the end of the wrapper ready for a new operation. The arm 13, which operates the shaft 5, is pivotally mounted at 14 in a bracket 15, secured to the side *b* of the frame, and is made of material which will permit it to spring a short distance to throw its free end out of and into engagement with a worm 16 on the drive-shaft *m*. The free end of the arm is so shaped that it normally engages both the worm 16 and the annular recess 11, formed in the collar 10 on the shaft 5, but it is permitted a movement toward and away from the shaft *m* sufficient to permit it to be thrown out of engagement with the worm 16, while maintaining its engagement in the recess 11 for the purpose of returning the shaft 5 into the position shown in Fig. 3, as will hereinafter appear. The arm 13 is held normally pressed into engagement with the worm 16 by means of a flat spring 17. (Partially broken away in Fig. 3, but shown in edge elevation in Fig. 1.) By its engagement with the worm 16 the arm 13, and hence the shaft 5, is rocked to the left as the drawing, Fig. 3, is held for reading to positively withdraw the bearing end 6 of the shaft 5 from the field intermediate of the rollers as the shaft *m* begins its rotary movement to wrap the bunch and after reaching the outer end of the worm 16 it will be held in its position until positively returned into its position shown in Fig. 3, with its end 6 in the field between the rollers. This return movement is effected by means of a foot-treadle 96 of any well-known or approved form within convenient reach of the foot of the operator communicating by means of a connection 18 (see Fig. 1) with the end of a rearwardly-extending arm 19, connected with the rock-shaft *u* for the purpose of throwing the upper roller *p* over to the rear out of operative position. The said arm 19 in its downward movement engages the arm 20 of a vertically-vibrating lever pivoted at 21 to the rear side of the bracket 15 and carrying at its opposite end a toothed sector 22, engaging a spur-wheel 23, mounted on the rear of the bracket 15, which spur-wheel in turn engages a spur-wheel 24, mounted on a short axle 25, extending through the bracket 15 and carrying on its opposite end a combined lifting and conveying cam 26. The shaft 25, carrying the lifting and conveying cam 26, is provided with a retracting-spring 27, in the present instance wound thereon with one end engaged with the bracket 15 and the other with the cam 26, for the purpose of holding the lifting and conveying cam 26 normally in the position shown in Figs. 2 and 3, out of engagement with the arm 13. When, however, the arm 20 of the vertically-vibrating lever is depressed, it will move the sector 22 upwardly and rotate the gear 23, in engagement with the gear 24, in a direction to positively rock the lifting and conveying



cam 26 up toward the arm 13 when the latter is at the limit of its outward throw. (See dotted lines, Fig. 3.) The first effect of this engagement of the cam 26 with the arm is to lift the arm as it rides along the curved surface 28 on the end of the cam sufficiently to lift the free end of the arm 13 out of engagement with the worm 16, and the further swinging movement of the cam 26 will convey the arm bodily while lifted out of engagement with the worm 16 back to its position shown in full lines, Fig. 3, and with it will carry back the shaft 5 into the position for its bearing-point 6 to receive the end of the wrapper for a new operation. As the arm 13 nears the limit of its return movement it will engage the offset 98 on the cam and crowd it back into position to release the arm. As soon as the operator removes pressure from the treadle the shaft 25, under the tension of the spring 27, will be rocked in a direction to return the lifting and conveying cam into its position (shown in Figs. 2 and 3) out of engagement with the arm 13, and will at the same time lift the arm 20 into its position to be again operated by the arm on the rock-shaft *u* as soon as the said arm has been lifted by the forward swing of the upper roller *p* into rolling position. When the lifting and conveying cam 26 is returned to its normal position, it permits the arm 13 to drop again into engagement with the worm 16 to be operated by the rotary movement of the shaft *m* when the latter is set in motion for another wrapping operation.

As the arm 13 is moved outwardly by the worm on the shaft *m* and inwardly by the operator in the manner hereinabove set forth it positively operates a gum-feeding plunger under the gum-supply tank as follows: The gum-supply tank is denoted by 29, and underneath it (see Fig. 6) there is located a cylinder 30, the interior of which is in communication with the interior of the tank through a small aperture 31 in the bottom of the tank. Within the cylinder a plunger 32 is adapted to reciprocate, the cylinder being closed at its outer end by a screw-cap 33, through which the plunger passes, a space 34 being left between the cap and the end of the cylinder in proximity to the plunger for a liquid or other seal. The plunger 32 is given a short longitudinally reciprocating movement by means of a lever pivoted at 35 to the bottom of the tank and provided at its rear end with an arm 36, set at an angle to the body of the lever and provided with an elongated slot 37 for the reception of an operating-pin 38, projecting laterally from the outer end of the plunger. The opposite arm 39 of the plunger-operating lever is connected by means of a rod 40 with the arm 13, hereinbefore described. For the purpose of adjusting the throw of the plunger 32 the arm 39 of the plunger-operating lever and the arm 13 are, one or both of them—in the present instance both of them—provided with a series of holes denoted in the

present instance those in the arm 39 by 41 and those in the arm 13 by 42. The connecting-rod 40 has its ends turned in position to be dropped into the holes 41 42 nearer to or farther away from the pivotal points of the levers to increase or diminish the throw of the plunger at pleasure. The gum as it is permitted to enter the cylinder 30 through the opening 31 as the plunger 32 is withdrawn is forced by the advance movement of the plunger through a pipe 43, connected with the forward end of the cylinder to a shallow tapered recess 44, where the tip of the cigar is to be formed, so that the end of the wrapper which is finally twisted around the tip shall come in contact with the gum in the recess 44 and be thereby secured against liability of unwinding. The pipe 43, leading from the cylinder 30 to the tip-recess 44, is provided with a check-valve 45 in order that the gum which has been advanced along the pipe 43 may not be withdrawn as the plunger 32 is retracted, thereby insuring a constant and regular feed of the gum to the tip-recess 44 in such quantities as may be demanded.

The forward and downward movement of the upper roller *p* into rolling position takes place under gravity as soon as permitted by the removal of pressure from the treadle 96, and the amount of pressure which the said roller *p* is to exert upon the bunch to be wrapped is determined by means of a weight 46, having a screw-threaded engagement with a rod 47, fixed to the arm 19. As the weight is caused to travel along the rod 47 toward the rock-shaft *u* the pressure will be increased, and as it is caused to travel outwardly along the said rod it will be diminished.

The trimming of the outer end of the cigar, as well as the cutting of the tip when a cheroot is to be manufactured, is effected by means of cutters located at the opposite ends of the wrapped bunch and operated as follows: For the purpose of trimming the outer end of the cigar or the end which is to be ignited in smoking a rocking curve-faced knife-blade 48 is mounted in rocking adjustment in position to engage the lower portion of the end of the cigar-bunch. A movable blade 49, provided with a swan-like neck and a curved cutting edge 50 to engage the upper portion of the cigar opposite the blade 48, is fixed on a rock-shaft 51, held normally by a spring 52, rocked in a direction to hold the cutter open, as shown in Fig. 4. The lower blade 48 is mounted on the shaft 53 of the roller *e* and is provided with a tailpiece or arm 54, engaged with the body of the blade 49 by means of a screw or stud 55, extending through an elongated slot 56 in the blade 49. The shaft 51, which rocks the blade 49 by its connection with the tailpiece 54, also rocks the blade 48 and is operated in a direction opposite the tension of the spring 52 by means of a hand-lever 57 at the side of the machine (see Fig. 2) within convenient



reach of the operator. As the hand-lever 57 is pulled forward it will rock the cutting end 50 of the upper cutting-blade downwardly into contact with the bunch, and this movement of the upper blade 49 will by its connection with the tailpiece 54 of the cutter 48 rock it upwardly into engagement with the wrapped cigar, thereby trimming off the end of the cigar with a shear-like operation.

10 In the event the tip of the cigar is to be cut off, as in forming a cheroot, a blade 58 may be attached to the rock-shaft 51 and operated by means of the forward movement of the hand-lever 57 to cut the tip of the cigar which

15 projects beyond the tip-recess 44, the outer edge of the bed-piece 59, in which the recess 44 is located, serving the purpose of a fixed lower cutting-blade to cooperate with the blade 58 to effect its cutting operation.

20 When the feeding mechanism, or more properly the wrapper-delivering mechanism for smoothing and delivering the wrapper at the proper angle to the wrapping-rollers, is employed, the table  $z$  is cut away at its rear

25 edge to permit the said smoothing and delivering mechanism to be set up for operation, as follows: A guide-bar 60 is fixed in brackets 61 62 at the front of the sides  $b$  and  $c$  of the frame, and on it is loosely mounted a

30 slide or carriage 63, provided with a rearwardly-projecting foot 64 in position to be lifted into engagement with a worm 65 on a worm-shaft 66, mounted in the frames  $b$   $c$  parallel with the guide 60 and operating simultaneously with the drive-shaft  $m$  by

35 means of a spur-gear 67 on its end in mesh with an intermediate gear-wheel 68, and which at the same time intermeshes with the gear  $k$  on the end of the shaft of the roller  $f$ .

40 The slide or carriage 63 is connected by a link 69 with a slide 70, arranged to travel along an elongated slot 71 in a track 72, fixed above the guide-bar 60 and capable of being set at different angles in a horizontal plane

45 to the axes of the rollers by means of the pivotal connection of one end of the track at 73 with the bracket 62, and the pivotal connection of its opposite end at 74 with an arm 75, provided with an elongated slot 76,

50 through which it is connected by a binding-screw 77 with the bracket 61. The slide 70 is provided with a standard 78, uprising therefrom and fixed at its base in tilting adjustment between a pair of ears 79 and 80 by

55 a suitable rock pin or bolt 81. The bolt 81 also has secured thereon by means of a collar 82 a downwardly and laterally extending arm 83, the lower free end of which is in a position to engage the side of the bracket 61

60 when the slide 70 is returned along the track 72 for the purpose of rocking the bolt 81 and the brush-carrying standard 78 thereon in a direction to lift the brush from its bearing for the insertion of a new wrapper. The

65 brush is denoted by 84 and is carried by a head 85, secured by means of ears 86 87 on a rod 88, projecting laterally from the top of

the standard 78. The rod 88 is provided with a clamp-nut 89 for the purpose of locking the brush-head in different tilted adjustments on 70 the rod, as may be desired. The lower end of the brush 84 rests normally upon an oval convex wrapper-bearing 90, fixed on the slide 70. The foot 64 rests normally out of engagement with the worm 65 on the worm-shaft 66, 75 but may be thrown into engagement with said worm and held in engagement therewith during the travel of the carriage 63 and slide 70 along the guide-bar and track by means of a rocking cam-shaft 91, operated by means 80 of an arm 92, under the control of the operator, by means of a treadle 97 of any well-known or approved form connected with its free end. The return movement of the carriage and slide is provided for by a weight 93, 85 connected by a suitable flexible connection 94, passing over a guide-pulley 95, with the carriage 63. Assuming the carriage to be at the limit of its return movement—as shown, for example, in Fig. 3—and the arm 83 in en- 90 gagement with the bracket tending to lift the brush from the convex wrapper-support 90, a wrapper may be placed with its end on the bearing 6 and extended thence toward the front between the brush 84 and the convex 95 bearing 90. The cigar-bunch having been placed in position between the rollers  $e$  and  $f$  with its tip in the tip-recess 44 and its opposite end resting on the wrapper at the wrapper-bearing 6 the upper roller  $p$  may be lowered into engagement with the cigar-bunch 100 and the operating-shaft  $m$  set in motion. This will simultaneously start the three rollers  $e$ ,  $f$ , and  $p$  in the same direction and begin the winding of the wrapper around the bunch. 105 At the same time the shaft 5 will be withdrawn by means of the arm 13 and the wrapper-delivering support 90 with the brush smoothing the wrapper out over it as it is drawn between the two by the operation of 110 the rollers will be simultaneously carried to the right along the track 72 by the engagement of the foot 64 with the worm on the worm-shaft 66, thus presenting the wrapper at the proper angle to the wrapping-rollers. 115 As soon as the wrapping is complete the delivering-support 90, together with the brush, will be returned to its normal position by the weight 93 as soon as the foot 64 is allowed to drop out of engagement with the worm on the 120 worm-shaft 66, and while this is taking place the operator may trim the opposite ends of the cigar or cheroot by operating the rock-shaft 51 and by the treadle movement may return the arm 13, and hence the shaft 5 and 125 bearing 6, into their positions to repeat the operation at the same time that the roller  $p$  is lifted for the reception of a new wrapper and bunch.

The operation of the gumming-plunger simultaneously with the movement of the arm 13 has been hereinbefore particularly described. 130

It is obvious that changes might be resort-



ed to in the form and arrangement of the several parts without departing from the spirit and scope of my invention. Hence I do not wish to limit myself strictly to the structure herein set forth; but

What I claim is—

1. A cigar-wrapping machine comprising a group of three rollers, one of the rollers being arranged to swing toward and away from the other two, a drive-shaft and gear for connecting the drive-shaft with the three rollers to cause them to rotate in the same direction, the said gear including an intermediate gear-wheel mounted on a fixed support and arranged to impart motion to the swinging roller, the gear on the shaft of the swinging roller being arranged to swing in a curved path into and out of engagement with the said intermediate gear-wheel, substantially as set forth.

2. A cigar-wrapping machine comprising a group of rollers, a bearing for the end of the wrapper, means for simultaneously operating the rollers, the said wrapper-bearing being normally connected with the said roller-operating means to be withdrawn, means for returning the said wrapper-bearing to its operative position and means for temporarily disconnecting the said bearing from the roller-operating means to permit it to be returned, substantially as set forth.

3. A cigar-wrapping machine comprising a group of rollers, a bearing for the end of the wrapper, a drive-shaft for operating the rollers, the said drive-shaft being provided with a worm and means for connecting the worm on the drive-shaft with the said wrapper-bearing whereby the bearing for the end of the wrapper is withdrawn from operative position simultaneously with the rotary movement of the drive-shaft, substantially as set forth.

4. A cigar-wrapping machine comprising a group of wrapping-rollers, a longitudinally-reciprocating bearing for the end of the wrapper, a shaft for driving the wrapping-rollers, the said shaft being provided with a worm, a swinging arm having an engagement with the said reciprocating bearing and with the worm on the shaft for withdrawing the said bearing from operative position as the winding progresses and means for returning the said arm to its normal position independently of the rotary movement of the shaft, substantially as set forth.

5. A cigar-wrapping machine comprising a group of wrapping-rollers, a reciprocating bearing for the end of the wrapper, a shaft for driving the wrapping-rollers, the said shaft being provided with a worm, a yielding swinging arm having an engagement at the same time with the worm on the shaft and with the reciprocating bearing for withdrawing the bearing from operative position as the shaft rotates to perform the winding and a combined lifting and conveying cam under the control of the operator to throw the yielding

swinging arm out of engagement with the worm and return it together with the reciprocating bearing to its normal position, substantially as set forth.

6. The combination with the reciprocating bearing for the end of the wrapper, the wrapping-rollers and the means for operating them, of the swinging yielding arm for operating the reciprocating bearing, the lifting and conveying cam, the gear under the control of the operator for swinging the lifting and conveying cam into engagement with the yielding swinging arm to return the reciprocating bearing to its operative position and means for returning the lifting and conveying cam to its normal position, substantially as set forth.

7. In combination, means for applying the wrapper to a cigar-bunch, a gum-supply tank, a conduit leading from the gum-supply tank to the position which the tip of the cigar is to occupy, a plunger-cylinder beneath the tank and in communication with the tank and conduit, a reciprocating plunger in said cylinder for forcing the gum along the said conduit and means for operating the said plunger simultaneously with the winding operation, substantially as set forth.

8. In combination, means for performing the wrapping operation, a gum-supply tank, a conduit leading from the gum-supply tank to the position which the tip of the cigar is to occupy, a check-valve in said conduit, a cylinder communicating with the tank and conduit, a reciprocating plunger in the cylinder for forcing the gum along the said conduit and means for operating the said plunger simultaneously with the winding operation, substantially as set forth.

9. The combination with the wrapping-rolls, one of the said rolls being arranged to be lifted away from the others, of a reciprocating bearing for the end of the wrapper, an arm for operating the said bearing, a shaft for operating the rolls, means for placing the said arm under the control of the roll-operating shaft for withdrawing the bearing from operative position, means for returning the arm and reciprocating bearing to its normal position, and means for placing the said arm-returning mechanism under the control of the roll-lifting mechanism for operating the arm-returning mechanism, substantially as set forth.

10. A cigar-wrapping roller, provided with an operating-surface provided with ratchet-like teeth extending diagonally along its surface to insure a grip upon the cigar bunch or wrapper, substantially as set forth.

11. A cigar-wrapping roller having an operating-surface having a plurality of series of ratchet-like teeth extending diagonally along the surface, one of the series being set diagonally in a direction the reverse of that in which an adjacent series is set to prevent the bunch and wrapper from creeping cut of position, substantially as set forth.



12. The combination with the wrapping-rolls and means for operating them, of a rest for the cigar bunch and wrapper the said rest being located in proximity to the rolling-surfaces and formed concave in longitudinal section to correspond to the shape of the cigar, substantially as set forth.

13. The combination with the rollers for applying the wrapper and means for operating them, of a pair of trimming-blades mounted upon separate pivots and located in position to engage the end of the wrapped bunch, means for connecting one of the blades with the other at a point intermediate of the ends of the latter and a rock-shaft under the control of the operator for operating one of the blades and through the said intermediate connection operating the other of said blades, substantially as set forth.

14. The combination with a suitable wrapping mechanism, of a wrapper-delivering mechanism driven by the cigar-wrapping mechanism and comprising a convex wrapper-support, a brush for spreading the wrapper smoothly on the convex support and means for causing the brush and support to travel in a longitudinal direction of the cigar-bunch during the winding operation, substantially as set forth.

15. A wrapper-delivering mechanism comprising a carriage under tension tending to hold it at one end of its traveling movement, a guide along which the carriage is arranged to travel, a wrapper-support, a track along

which the wrapper-support is arranged to travel, a link connecting the wrapper-support with the carriage, a worm-shaft, means for operating the worm-shaft and means for placing the carriage under the control of the worm-shaft and under the control of the tension device to move the carriage and hence the wrapper-support in either of two opposite directions, substantially as set forth.

16. A wrapper-delivering device comprising a convex support for the wrapper, means for holding the brush in tilted adjustment in the direction of the travel of the wrapper to spread the wrapper smoothly on the convex support and means for directing the said support and brush longitudinally along the bunch to be wrapped, substantially as set forth.

17. A wrapper-delivering device comprising a convex wrapper-support, a brush for holding the wrapper smoothly on the support, means for moving the brush and its support along the bunch to be wrapped and means for tilting the brush away from its support as it reaches the limit of its return movement to receive another wrapper, substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 21st day of March, 1901.

F. L. HERRINGTON.

Witnesses:

FREDK. HAYNES,  
C. S. SUNDGREN.