Sheet 1, 2 Sheets.

I. A. Heald.

Cigar Mach.

No. 86,541. Patented Feb. 2, 1869.

Fig. 3.

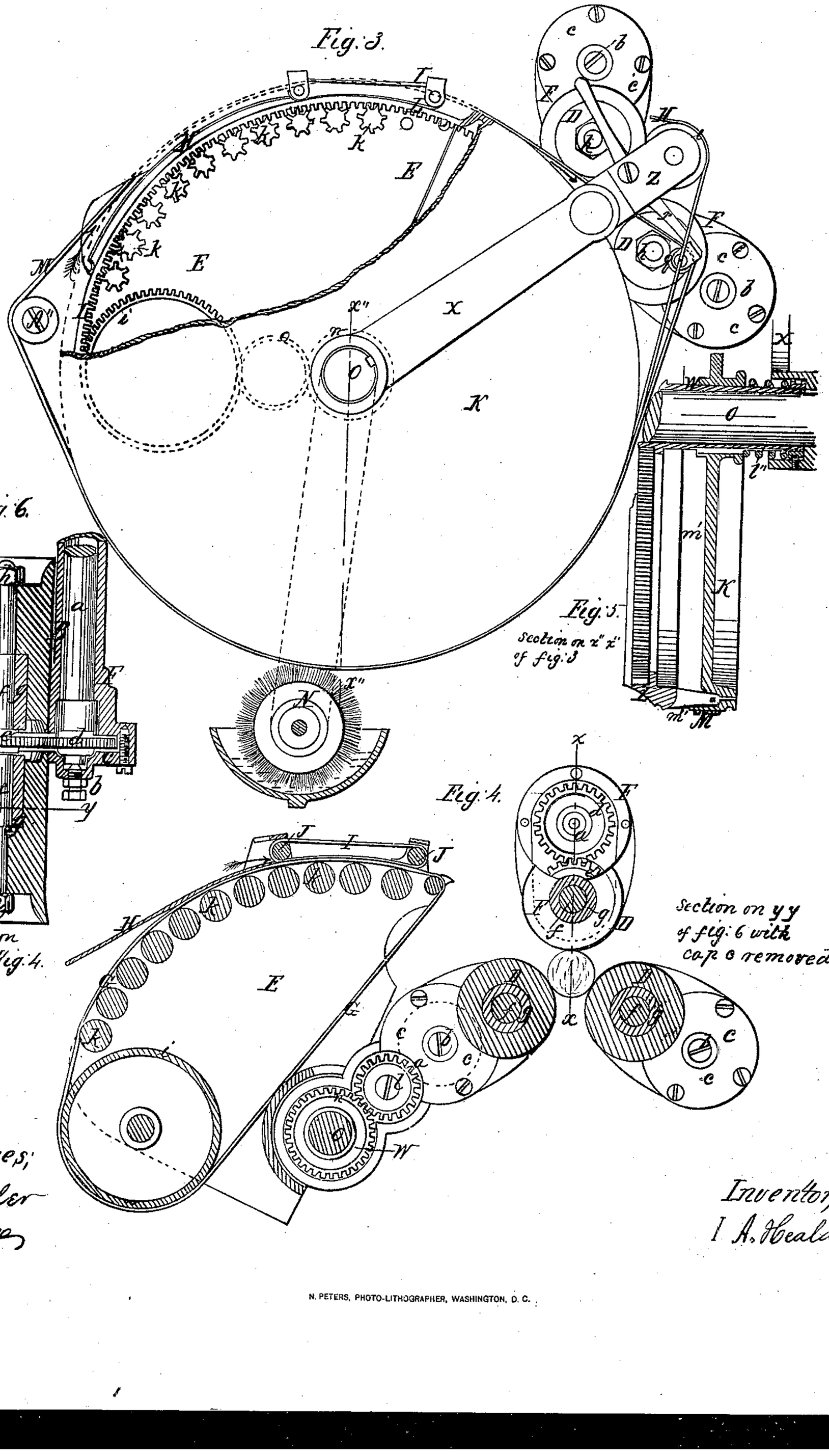

Fig. 5.
Section on x'' x'' of fig. 3

Fig. 6.

Section on x, x of Fig. 4.

Fig. 4.

Section on y y of fig. 6 with cap c removed

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Sheet 2, 2 Sheets.

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Fig. 7.

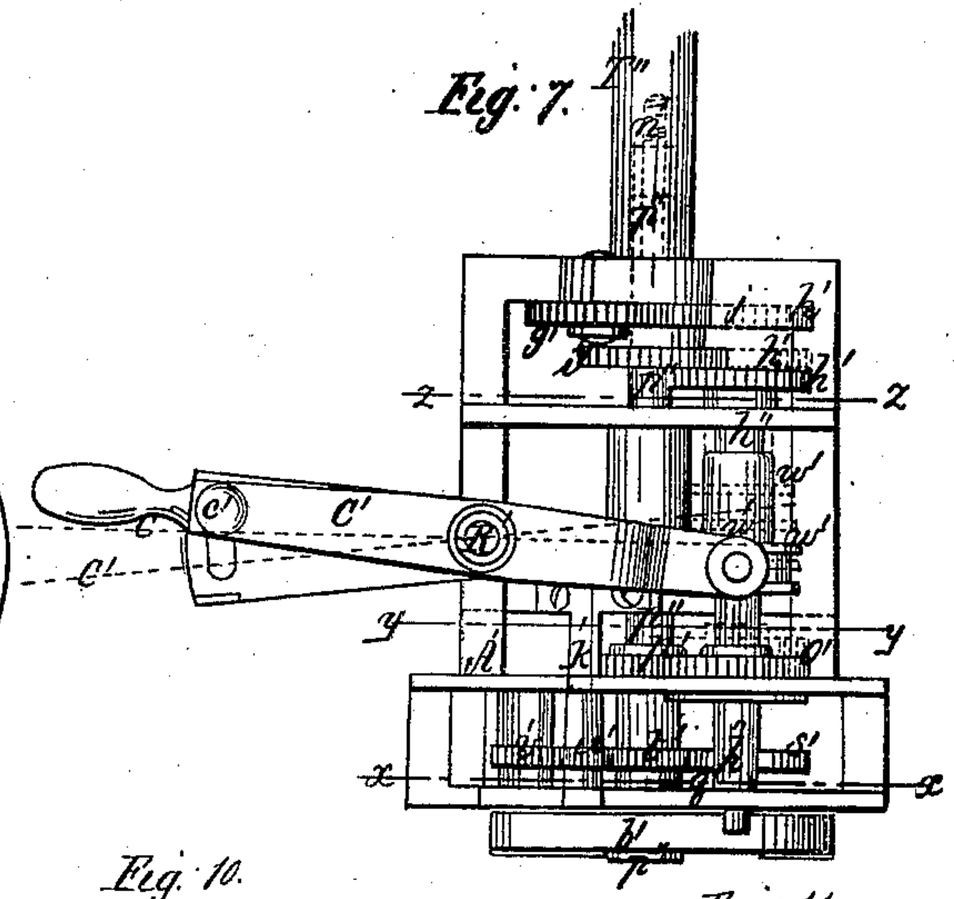


Fig. 8.

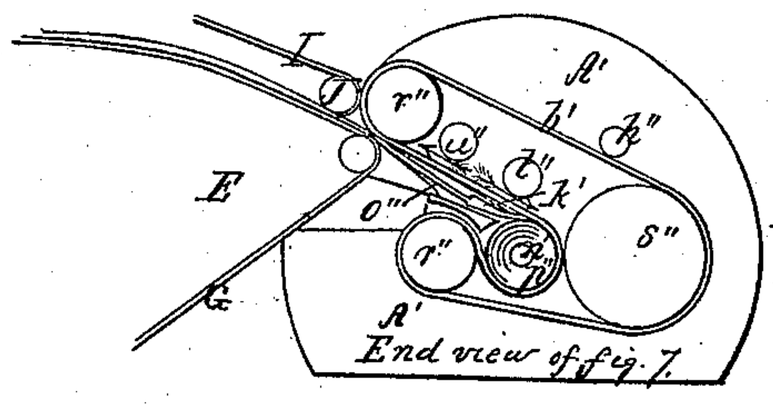


Fig. 9.

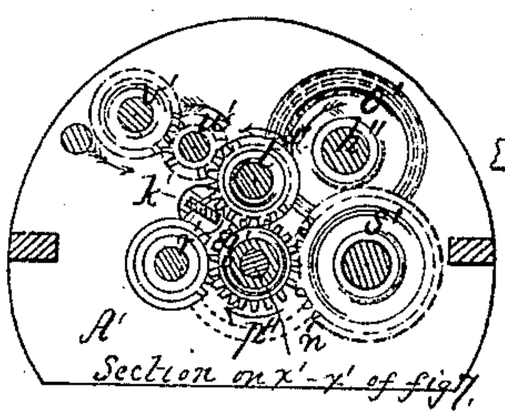


Fig. 10.

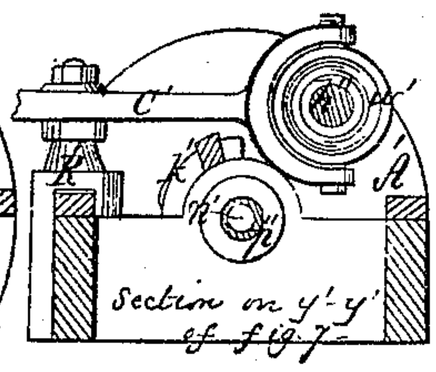


Fig. 11.

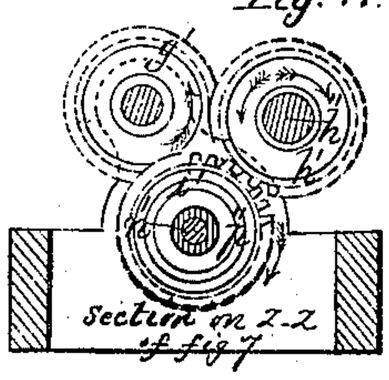


Fig. 12.

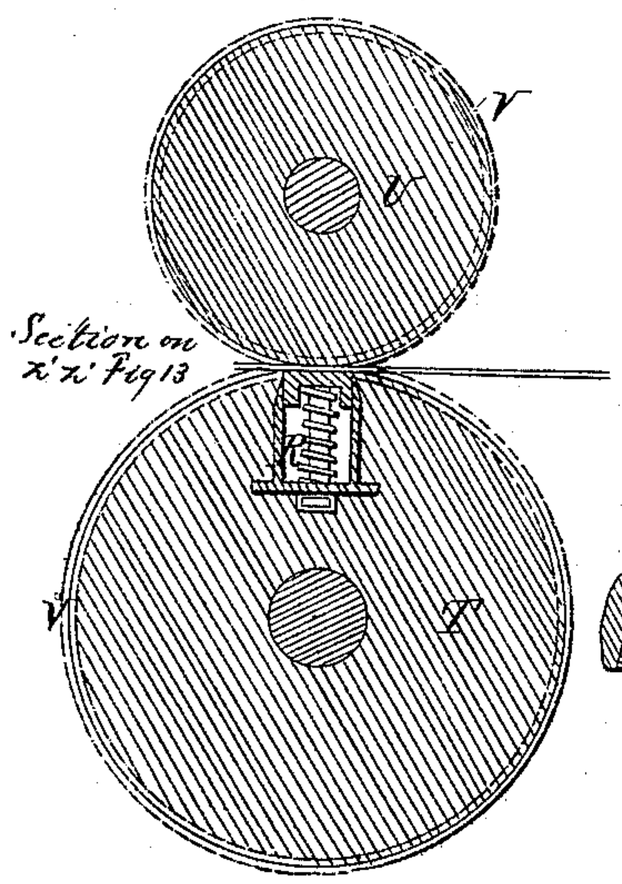
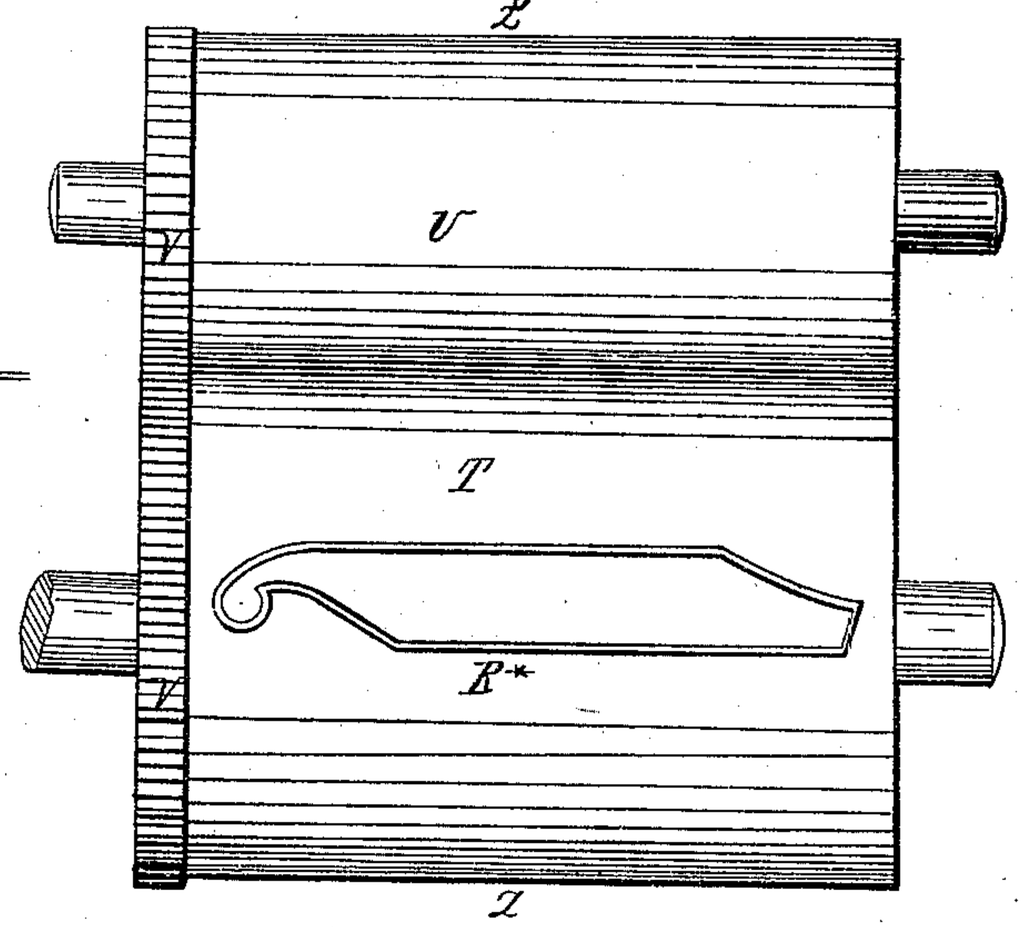


Fig. 13.



Witnesses;
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ISSACHAR A. HEALD, OF WASHINGTON, DISTRICT OF COLUMBIA.

Letters Patent No. 86,541, *dated February* 2, 1869.

CIGAR-MACHINE.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, ISSACHAR A. HEALD, of Washington, in the county of Washington, and District of Columbia, have invented certain new and useful Improvements in Cigar-Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this specification, and to the letters of reference marked thereon, like letters indicating like parts wherever they occur.

To enable others skilled in the art to construct and use my invention, I will proceed to describe it.

My invention relates to machines for making cigars, and consists in certain improvements upon the machines heretofore patented to me, the improvements in this case relating mainly to the manner of supporting the rolls which form the filler or body of the cigar, and to various devices for putting on the wrapper of the cigar.

The drawings, from Figure 3 to Figure 13, inclusive, exhibit my improvements in detail.

In this machine, the body of the cigar is formed by rolling it between three fluted rolls, D, shown more clearly in Figure 2.

Heretofore, these rolls have been supported by bearings, either at one or both ends, in which cases it was impossible to bring the devices which formed the point and cut off the end of the cigar, into the required position to operate successfully.

To obviate these difficulties, I now support the rolls D by a single bearing at their centre, as represented in figs. 2, 4, and 6.

The rolls are mounted on a bearing, F, attached rigidly to the end of hollow arm, B, in each of which there is a rotating shaft, *a*, the three arms B, with their shafts, being located concentrically about the shaft of wheel C*, on which is a pinion, that imparts motion to each of said shafts *a*.

The support F is attached to the end of the arm B, and is made of sufficient size at that point to enclose the pinion *d* on the end of the internal shaft *a*, as shown in figs. 4 and 6, the latter being a section on the line *x*–*x* of fig. 4.

The support F extends from thence downward, far enough to form, at its opposite end, a circle, corresponding in size with the size of the roll D, and projecting from each side is a journal, *g*, to form a bearing for the roll D, as shown in fig. 6, this journal having a hole bored through it longitudinally, to permit a shaft, *f*, to be inserted, and having a cavity formed at its centre, to permit a pinion, *e*, to be mounted on the shaft *f*.

The rolls D are formed in two parts, one part being slipped on to each projecting end of the shaft *f*, to which it is rigidly secured by a nut, *h*, located in a recess in the outer end of the roll, as shown in fig. 6.

It will thus be seen that the piece F, with its hub *g*, forms a support or bearing for the shaft *f*, to which the roll D is secured, and also encloses the pinions *d* and *e*, by which motion is imparted to the rolls, the rolls being thus supported at their centre only, leaving their ends free and unobstructed, so that the socket for forming the point, and the devices for applying and pasting the wrapper, can be brought in close contact at one end, and the devices for feeding in the wrapper, and the knife for cutting off the end of the cigar, can be brought close up to the rolls at the opposite end.

Upon an arm or rod, O, in front of the rolls D, I locate a frame, E, this frame having its front surface composed of a series of small rollers, *k*, as shown in figs. 3 and 4, with a larger roller, *i*, at the bottom of the series, these rollers all extending beyond the frame E, at the right-hand side, and terminating with a pinion, which engages in internal gear on a wheel, L, mounted on the arm O, there being a pinion, *n*, on a sleeve, W, mounted on this arm O, which imparts motion to the roller *i* by means of an intermediate gear, *o*, the roller *i*, in turn, giving motion to the wheel L.

Motion is communicated from the pinion *a*, that operates the lower roll D, through an intermediate pinion, *l*, to the sleeve W, as shown in fig. 4.

Around the rollers *k* and *i* is stretched an endless apron, G, and directly over this, near the inner edge of frame E, I locate two rollers, J, around which extends either a series of bands, or an endless apron, I, with its under surface resting upon the apron G, as represented in fig. 4; and from the rear one of these rollers J there extends back, a short distance, a permanent table, H, which is secured at each end to the frame E, with its inner edge being close to the apron G, this table H serving to receive the wrapper when it is to be fed into the machine.

Upon the sleeve W, outside of the wheel L, is placed another wheel, K, which is provided with a feather, so as to admit of its being moved to or from the wheel L, and at the same time revolve therewith.

On the inner side of this wheel K, near its periphery, is secured a series of bristles, *m*, thus forming an annular brush, the object of which is to assist in feeding the wrapper in and around the point of the cigar.

Upon the extreme end of the arm O, outside of the wheel K, is secured an arm, X, figs. 2 and 3, which extends out beyond the periphery of the wheels L and K, and there has attached to it an inwardly-projecting arm, Z, to which is secured the socket or header, *w*, that forms the point of the cigar. (See fig. 3.)

In the upper end of the arm Z, I locate a pulley, having a bevel-pinion on the inner end of its shaft, which connects with a similar gear on the upper end of the shaft of a conical rotating former, which is located directly over the socket *w*, to assist in forming the point and applying the wrapper, a cord, *u*, fig. 3, transmitting motion from wheel K to these parts, through the pulley above mentioned.

Around this same wheel K, there extends also an elastic belt, M, which passes over a fixed pulley, A″,

in front, (see fig. 3,) which raises the belt clear of the wheel M at that point, to permit the end of the wrapper to be readily inserted under it, and be caught between the belt and the periphery of wheel K, and thus carry it forward, until it comes nearly opposite the cigar between the rolls D, when it is released, by having the belt M raised, by passing over a pulley, *q*, which is mounted on the end of a lever, *r*, pivoted to the arm Z, as shown more clearly in fig. 3, the time of its release being regulated by lever *r*, which may be operated sooner or later, as desired.

The frame E, with the wheels L and K, and the arms X and Z, with the socket *w*, with all their belts and attachments, are arranged to swing back away from the rolls D, and then be shoved slightly to the right, there being a feather or lug on the frame E, that works in a slot in the arm O, which prevents the frame from falling over beyond a certain point, and which also prevents it from being swung up to the rolls D, until returned to its proper position to the left.

The periphery of the wheel L is made convex on the side next to the frame E, as shown in fig. 5, so as to correspond in form with the point of the cigar.

Underneath this wheel is suspended, on an arm, a dish, for holding paste, in which is a revolving brush, N, driven by a belt, which passes around sleeve W, this dish and brush being held constantly in the same position, so that, when the wheel L, with the frame E, is moved to the left, the brush N is brought in contact with the concave portion of wheel L, by which it applies paste to the same, which, in turn, as it revolves, applies it to the end of the wrapper, as the latter is fed forward and around the point of the cigar, the wheel L being removed from contact with the brush N, when the frame E is thrown back, and moved to the right, as previously described.

The outer wheel K, as previously stated, is placed loosely on the sleeve W, and is held up to wheel L by a spiral spring, *l''*, so that it may be moved away from the same by the hand, whenever it is desired to apply the wrapper, it being shoved off far enough to permit the end of the wrapper to be inserted between the end of the bristles *m* and the adjoining face of wheel L, when the spring *l''* forces it back against L, thereby holding the end of the wrapper securely, and carrying it along to the filler, the object of the bristles being to take hold on the wrapper without tearing it.

I will here state, however, that when the belt M is used for feeding in the wrapper, the bristles are not used; and, in that case, the wheel K may be dispensed with, the wheel L being made enough wider to carry the belt M and cord *u*, if the latter be used.

In order to apply the wrapper more perfectly at the large end of the cigar, I mount upon the machine, opposite the end of the rolls D, at the left hand, a sliding frame, A′, the same being shown in plan, and detached, in fig. 7.

In this frame A are mounted the devices used for carrying the wrapper around the large end of the cigar, and the mechanism that operates these devices.

The frame is placed directly over the central shaft T‴, on which is mounted the wheel C*, that imparts motion to the rolls D, and on the opposite end of this shaft T‴, just to the left of the frame A′, are secured two pinions, *i′* and *j′*, the latter gearing into a loose pinion, *g′*, which is used for the purpose of reversing the motion of the devices, as hereinafter explained.

In the sliding frame A′ is mounted a sliding shaft, *h″*, which has on its left end a pinion, *h′*, arranged to gear into the pinions *i′* and *g′*, and near its right-hand end, a wide-faced pinion, *o′*, which gears into a pinion, *p′*, on a hollow shaft, *p″*, which shaft also carries another pinion, *q′*, (see fig. 9,) which pinion *q′* imparts motion directly to pinions *s′* and *r′*, and through intermediate pinions *t′* and *u′*, to pinion *v′*, arranged around it, as shown in fig. 9.

Each of these pinions *s′*, *r′*, and *v′*, is mounted on separate shafts, which project through the right-hand end of frame A′, and have on their projecting ends corresponding pulleys *s″*, *r″*, and *v″*, around which, and the end of shaft *p″*, an elastic belt, *b′*, is placed, as shown in fig. 8.

The parts are so arranged that the end of this shaft *p″* shall come directly opposite the end of the cigar, when the latter is in its place between the rolls D.

The end of this shaft *p″* is made cup-shaped, and the shaft slides on a stationary centre-rod, *n′*, as described in my former patent. When the filler is being rolled, its end enters the socket in the end of shaft *p″*, where it remains while the wrapper is being applied.

With these devices, thus arranged, it will be seen that the wrapper *o″*, fig. 8, as it is fed forward between the apron G and belts I, will be presented to the under surface of the front part of belt *b′*, directly under pulley *v′*, and will thus be carried by the belt *b′* around the cigar, which, as before stated, has its end resting in the socket or cup-shaped end of shaft *p″*.

As it is necessary to reverse the motion of the belt *b′*, to release the piece of wrapper held by it after the end of the cigar is finished by being cut off square, I arrange the shaft *h″*, which, as already described, drives the pulleys that carry the belt *b′*, so that it can be moved lengthwise in its bearings, by means of a lever, C′, pivoted to a stud, R′, attached rigidly to the main frame, as shown in figs. 7 and 10.

This shaft *h″* is provided with shoulders at each end, so that, after it has been moved a certain distance, the shoulders, one or the other, will come in contact with the end-pieces of the frame A′, and will thereby carry the entire frame, with all its fixtures, along with it, as indicated by the blue and red lines in fig. 7.

The shaft *h″* is thus arranged to occupy three different positions: First, when thrown to the extreme right, its pinion *h′* is entirely out of gear with the pinion *i′*, in which case all the mechanism in frame A′ and the belt *b′* will remain stationary. When the lever C′ is moved to the position indicated by the red line, fig. 7, the shaft *h″* will be thrown to the left far enough to cause its pinion *h′* to engage with the pinion *i′*, which will cause the belt *b′* to move in the direction indicated by the black arrow, fig. 8, which is the position of the parts when the wrapper is being fed in. By moving the lever C′ to the position indicated by the blue line, fig. 7, the shoulder of the shaft *h″*, striking against the end-piece of frame A′, carries the frame with it, drawing the belt *b′*, and all the parts except the stationary rod *n′*, back away from the end of the rolls D, at the same time throwing the pinion *h′* into gear with the pinion *g′*, as indicated by the blue lines in fig. 7, thereby reversing the motion of the belt *b′*, which serves to release the end of the wrapper that has been previously cut off, and cause it to be run back out of the way, by the reverse movement of the belt *b′*.

To assist in removing this detached fragment of the wrapper, I secure a blade, *k′*, permanently to the main frame, under the sliding frame A′, as shown in figs. 7 and 10, and have its free end protrude in front of the shaft *p″*, as represented in figs. 8 and 9, its length being such that when the frame A′ is shoved back away from the rolls D, as described, it will stand even with the belt *b′*, and, as the reversed motion of the belt feeds out the fragment of wrapper, the end of the blade being close up to the end of the cigar that has been cut off, engages under the lap or edge of the leaf, and insures its unwinding, and being released and fed out by the belt *b′*.

In the lower left-hand corner of the main frame, I mount two cylinders, U and T, one being a plain, smooth cylinder, and the other cylinder, T, having arranged around it a series of knives, R*, as represented in figs. 12 and 13, for the purpose of cutting out the wrappers.

This cutting-device was fully described in my former patent, and need not therefore be further described herein, the only improvement, in this instance, consisting of the arranging of them on a cylinder, and applying the pressure-cylinder U, so as to perform the cutting by simply passing the leaf or other material used for wrappers through between the cylinders, as represented in fig. 12.

The frame E, and the rod or arm O which supports it, being attached to the arm that supports the front roll D, would, by its weight, tend to throw these parts down, and thereby displace the front lower roll D. I attach to these parts, on the opposite side of the machine, a weight, which counterbalances their weight, and thus permits the front roll D to retain its proper position, notwithstanding the weight of frame E and its attachments.

The filler is placed between the rolls D by throwing the two front rolls apart, and the finished cigar is released by throwing the two lower rolls apart, the rolls D all having their supporting-arms B pivoted concentrically to a common centre, as described in my former patent, there being springs arranged to hold the rolls together in proper position for rolling the cigar, except when force is applied to change their position for inserting or removing the cigar, as above described.

The operation of the machine is as follows:

Motion being imparted to the driving-pulley, the frame E is thrown back and to the right. The front rollers are thrown apart, and the filler inserted, when the rolls return to their position.

The sliding frame A′ is then brought up to the end of the rolls D, bringing its feed-belt *b′* into position to feed on the wrapper, when frame E is thrown back, and secured in position by a catch, thereby bringing the socket for forming the pointed end into action.

The wrapper, having been previously cut to the desired form, is laid on the table H, when it is fed forward between the apron G and belts I, and is carried forward around the large end of the cigar or filled by the belt *b′*, the wrapper being wound around the filler spirally, the other end being caught under belt M, and carried along, it receiving paste at the same time from contact with the convex portion of wheel L, this end of the wrapper being released as it arrives at the point where it is smoothed down and finished by the socket *w*.

The rotary cutter is then raised far enough to cut off the large end of the cigar, when it drops back to its position. The frame E is released and thrown back, and the lower rolls D pressed apart, and the cigar drops out. At the same time the sliding frame A′ is thrown to the left, thereby reversing the motion of belt *b′*, which, with the assistance of blade *k′*, unrolls and throws out the end of the wrapper that had been cut off, the stationary rod *n′* at the same time pushing out of the cup-shaped end of shaft *p″* the portion of the filler that had been left therein when the cigar was finished by cutting it off.

The sliding frame A′ is then thrown forward again, and the operation repeated, as before.

Having thus described my invention,

What I claim, is—

1. The rolls D, supported and driven at their centres only, thereby leaving them free at both ends, substantially as described.

2. Applying paste to the end of a cigar-wrapper, by means of a revolving wheel, substantially as described.

3. The rotary brush N, when arranged to supply paste to the wheel L, substantially as set forth.

4. Feeding a cigar-wrapper to its filler, or core, by means of the endless aprons or belts G and I, arranged to operate substantially as described.

5. Feeding or guiding that end of the wrapper that covers the pointed end of the cigar, by means of the belt M, arranged to operate as shown and described.

6. The belt *b′*, arranged to operate as herein described, for guiding and feeding the wrapper around the large end of the cigar, as described.

7. The combination of the stationary blade *k′* and the belt *b′*, with its motion reversed, for removing the portion of the wrapper that is cut off, substantially as herein set forth.

8. The wheel K, with its brush *m*, arranged to operate substantially as described, for holding and guiding the wrapper upon the body of the cigar.

9. The arrangement of the cutters R* on a cylinder, T, in combination with the pressure-cylinder U, for cutting out cigar-wrappers, substantially as herein described.

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Witnesses:

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