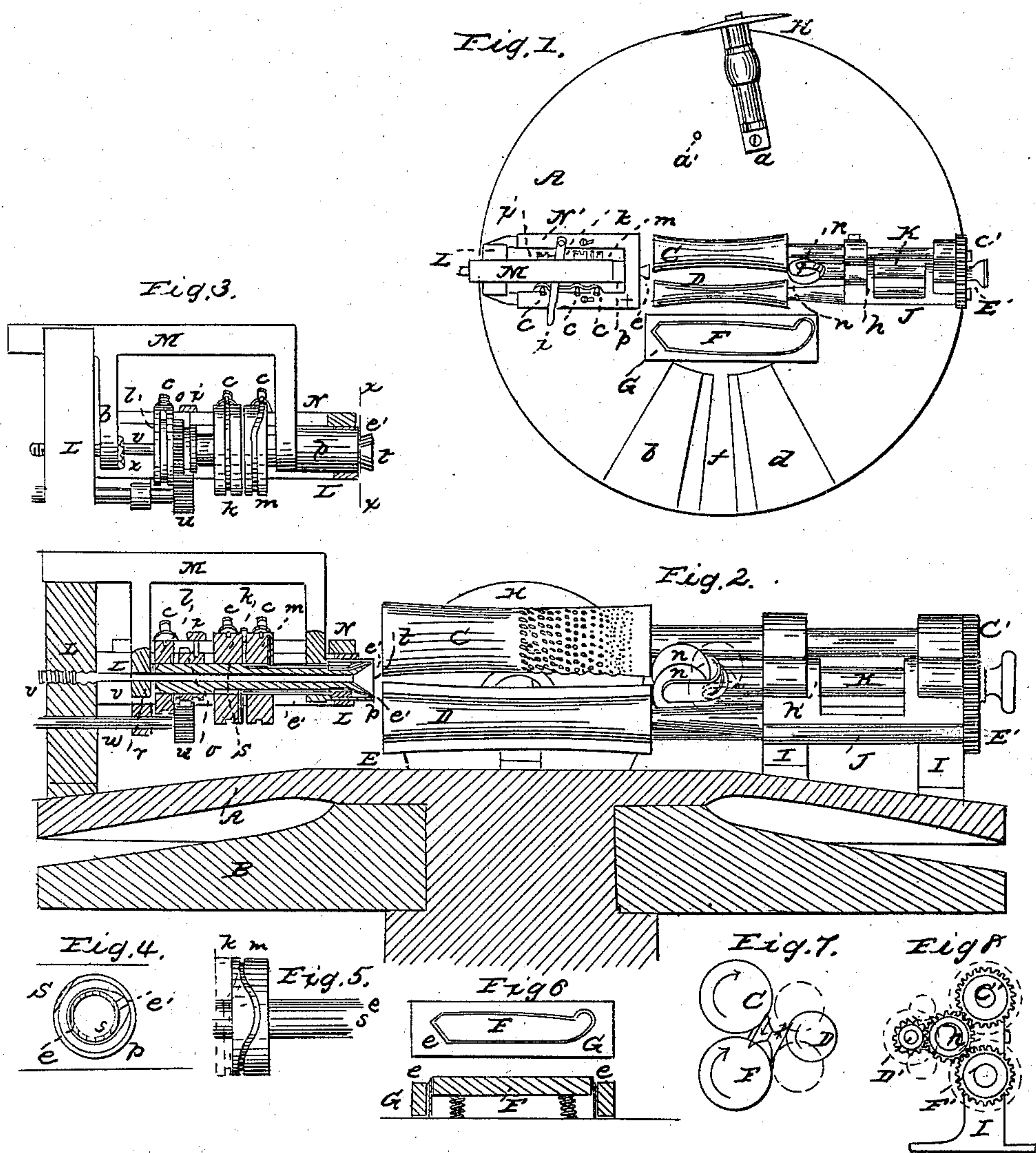


I. A. HEALD.
Cigar Machine.

No. 54,900.

Patented May 22, 1866.



Witnesses:

W. D. Dodol
H. B. Munro

Inventor:

Isaac A. Heald

UNITED STATES PATENT OFFICE.

ISSACHAR A. HEALD, OF CARLISLE, MASSACHUSETTS.

IMPROVEMENT IN MACHINES FOR MAKING CIGARS.

Specification forming part of Letters Patent No. 54,900, dated May 22, 1866.

To all whom it may concern:

Be it known that I, I. A. HEALD, of Carlisle, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Machines for Making Cigars; and I do hereby declare that the following is a clear, full, and exact description thereof, reference being had to the accompanying drawings, making part of this specification.

Figure 1 is a top-plan view; Fig. 2, a transverse vertical section of my improved machine, a portion being shown in elevation, Figs. 3, 4, 5, 6, 7, and 8 being views of portions shown in detail, as will be hereinafter explained.

The nature of my invention consists in a novel apparatus for rolling or forming the fillers of bodies of cigars; second, in a novel device for smoothing and cutting the wrappers; and, third, in a peculiar construction and arrangement of mechanism for putting on the wrappers, and in various details connected therewith.

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

A represents a circular table mounted on a central support, and B represents a similar circular plate or disk mounted loosely on the same support, directly underneath A, the adjoining faces of A and B being cut away, so as to leave between them a cavity or space corresponding in its cross-section with the form of a cigar, as shown in Fig. 2.

Two openings, *b* and *d*, are cut radially through the upper disk, A, a division-piece, *f*, being left between them, and having its edges inclined or beveled, as shown in Fig. 1. The lower disk, B, is made to revolve by any suitable means, the disk A remaining stationary.

The proper quantity of tobacco to form a filler is placed in the opening *b*, where it is caught by the revolving disk and carried around with it in the cavity between A and B, the filler being rolled over and over, and thus formed into shape. In Fig. 2 these disks are shown inclined from their center toward their periphery, which is necessary to keep the filler in a radial position and prevent it from being worked out from between the disks at their periphery. These disks may be inclined at any desired angle, according to their diameter and the form of cigar to be made, the larger end of the cigar being placed outward.

The surfaces of the disks A and B may be fluted radially, or otherwise roughened, in order to prevent the filler from sliding or slipping therein and insure its rolling, or they may be lined with brushes, as shown in the rolling apparatus of my patent of

H represents a rotary cutter, having its edge either smooth or provided with fine sickle-teeth, as may be desired and found most expedient in practice. This cutter H is secured to a shaft mounted in a proper frame secured to A in such a manner that the edge of H shall be presented close to the periphery of the disks A and B, and reach down past the cavity between them, so that as the filler is swept or rolled around its projecting end will be cut off even with the edge of said disks.

The frame which supports the cutter H is so arranged that by removing the screw *a* its inner end can be swung around and the screw entered in the hole *a'*, which will bring the opposite edge of H next to the disks, as indicated in red. This is only required in case the disk B should be made to rotate in an opposite direction, in which case the filler would be entered at *d* and delivered at *b*, the cutter H being represented in proper position to operate with the disk B, revolving in the direction indicated by the arrow shown in Fig. 1.

It will be understood that the filler, after having its end cut off by H, is carried around to the opening *d*, where it is delivered, ready for having the wrapper put on.

In order to wrap cigars properly, whether by hand or machinery, and more especially so in the latter case, two things are requisite—first, the wrapper or leaf must be smoothed and freed from wrinkles; second, the wrapper must be cut in the proper form or shape. These two operations I perform at one and the same time by a device of peculiar construction, as shown more clearly in Fig. 6, the first being a top-plan view, and the lower a longitudinal vertical section of the same.

F represents a block or plate of the form and size that it is desired to cut the wrapper. Fitting closely around the edges of this block F is a knife, *e*, the block F resting on springs, as shown in Fig. 6, so that when not depressed its upper surface will be flush with or slightly elevated above the cutting-edge of knife *e*.

G represents a block having a hole in it corresponding in shape with F, and of size as to permit it to be slipped down over and around

the knife *e*, as shown in Fig. 6. The leaf from which the wrapper is to be cut is spread over the block *F* and knife *e*, and the block *G* placed thereon. As *G* is pressed down the leaf is drawn tight, which removes the wrinkles during the first part of the operation, when, by continuing to press *G* down, the wrapper is cut out by the knife *e* and is immediately thrown up out of the space within the knife *e* by block *F*, which is forced up by the springs as soon as the wrapper is cut.

I represents a frame mounted on the table *A*, supporting in fixed bearings two rollers, *C* and *E*, arranged parallel to each other, *E* being located directly under *C*. Another roller, *D*, is mounted in a frame, *J*, which is pivoted by the arms *h* to the rod *K*, which is placed centrally and equidistant from the axes of the rollers *C*, *D*, and *E*, the relative position of the rollers being clearly shown in Fig. 7, which is an end view of the same.

Upon the rear end of the shaft of each of the rolls is mounted a pinion, as shown in Fig. 8, a pinion being mounted on the shaft *K* centrally between the pinions *C'*, *D'*, and *E'*, so as to gear into and drive them all.

By having the roller *D* mounted in the hinged bearing or frame *K* it can be moved up or down, as shown in red lines in Figs. 7 and 8, the frame *J*, with its roller *D*, moving in the arc of a circle of which *K* is the center, by which means its pinion *D'* is always kept in gear with the central pinion on shaft *K*, whether the roll *D* be raised or lowered.

The rolls *C*, *D*, and *E* are increased in diameter gradually from the center toward each end for the purpose of forming a space between them of a form to correspond with the shape of the cigar to be made. To insure the rolling of the cigar or filler when placed between said rolls they are roughened on their surfaces by having small cavities formed therein, as shown on a portion of roll *C* in Fig. 2. It will be observed that these cavities increase in depth and size toward the central portion of the roll, so that the middle portion of the cigar, which is the largest, and will therefore revolve at a greater rate of speed than the ends, which are smaller, will not slip or slide on the rolls, the slipping, if any, being at the ends.

The shaft *K* is made movable endwise, as shown in red in Fig. 2, and at its front end it is provided with two prongs projecting longitudinally, between which, upon a pin or journal passing transversely through said prongs, two conical rollers, *n n*, are mounted, with their apexes adjoining, as shown in Figs. 1, 2, and 7.

Upon the table, at the opposite end of the rolls from frame *I*, is mounted another frame, *L*, which supports a series of mechanical devices for assisting in putting on the wrapper. The frame *L* is rectangular in form, as shown in plan in Fig. 1, its rear end projecting up above the main body to form a bearing for the rear portion of the sliding frame *M*. Within the frame *L* is mounted a small rod, *v*, having

a set-screw, *v**, at its end for the purpose of adjusting it longitudinally. Upon and encircling this rod *v* is a sleeve, *s*, having its front end, *t*, formed cup shape, as shown in section in Fig. 2. Upon this hollow shaft or sleeve *s* is mounted rigidly at its rear end a collar, *l*, and adjoining that a loose pinion, *o*, gearing into the driving wheel or pinion *u*, secured upon the shaft *w*.

The pinion *o* is moved to and fro by a lever, *i*, and is so arranged that when moved to the collar *l* it engages therewith, and thus communicates motion to the shaft or sleeve *s* and the cams *k* and *m*, which are also mounted on sleeve *s*, but in such a manner as to permit of their being moved to and fro thereon.

To each of the cams *k* and *m* is attached, internally, a slender strip of metal, *e'*, extending to the front end of sleeve *s*, and lying in grooves cut longitudinally in the outer surface of *s*, the strips *e'* being springs, and so curved as to spring away from *s* at the front end when not held in contact therewith, as shown at *e'* in Fig. 3. These pieces being secured rigidly to the cams *k* and *m*, one to each, and resting in the longitudinal grooves cut in the surface of *s*, operate also as feathers or keys to cause the cams to revolve with *s*, while being free, at the same time to move to and fro on *s*.

In the periphery of both *k* and *m* a curved groove is cut, as shown in Figs. 3 and 5, the cams being so arranged on the shaft *s* that the curve in the groove of one shall be on the opposite side of the shaft from the other, as shown in Fig. 5, where the red lines represent the groove on the opposite side of *k*.

Resting upon the main body of frame *L* is a duplicate frame, *N*, this latter being secured to *L* by screws passing through slots therein, as shown in Fig. 1, so as to permit the frame *N* to be moved back and forth thereon, as hereafter explained.

Pins *c*, secured to frame *N*, project so as to cause their points to rest in the grooves in the periphery of cams *k* and *m* and collar *l*, so that as frame *N* is moved in either direction shaft *s* and the cams *k* and *m*, with the fingers *e'*, are moved with it.

It will thus be seen that when frame *N* is stationary and shaft *s* with *k* and *m* are made to revolve, the two latter will be caused to move suddenly backward when the curve in their slots come opposite the respective pins *c*, which will cause the fingers *e'*, attached to them, to be also drawn back within the tube *p*, one finger, *e'*, being drawn back while the other is thrust forward, and vice versa, owing to the arrangement of the curves in the slots or grooves of *k* and *m* on opposite sides of the shaft *s*, as already described.

M is a vertical frame, resting at its rear end upon the projecting post of *L*, its front end being provided with a hollow journal, *p*, which surrounds the front end of shaft *s*, and serving as a journal-box for it in the front end of frame *L*.

Fig. 4 is an end view of the hollow journal

p, with the shaft *s* cut off on the line *x x* of Fig. 3, to show the peculiar formation of the interior of *p*.

It will there be seen that on one side the interior wall or surface of *p* is cut away so as to make its interior surface eccentric, as there shown. This is done for the purpose of permitting the fingers *e'* to spring outward as they revolve with shaft *s* and come opposite that point, and thus leave an open space between the end of the finger and the conical head *t* of shaft *s*, as shown in Fig. 3, the fingers *e'* being held in close contact with said head *t* during the balance of their revolution.

The frame *M* is also made to slide longitudinally for a short distance, so that when moved forward, as shown in Fig. 2, the hollow journal *p* will come even with the end of *t*, and completely cover it and the fingers *e'*, holding the latter tight between it and *t*; but when shoved back, as shown in Fig. 3, it will leave the head *t* protruding, and the fingers *e'* free to move both longitudinally and radially, as previously described. On the arm *z* of frame *M*, which slides on rod *v*, is placed a clutch, *r*, having V-shaped teeth or projections, as shown in Fig. 3, which engage with similarly-formed recesses cut in the end of shaft *s*, when *M* is shoved forward to prevent *s* from revolving at such times as *M* shall be moved forward, as shown in Fig. 2.

The operation is as follows: The filler or body of the cigar is placed between the rolls *C*, *D*, and *E*, the roll *D* being thrown down to permit it to be readily entered, after which *D* is brought back to a position opposite the space between *C* and *E*. The shaft *K* is shoved forward, causing the conical rollers *n n* to inclose the pointed end of the cigar. At the same time the frame *M* is shoved forward, carrying the frame *N* with it, which causes the cup *t* to inclose the large end of the cigar. When the filler has been sufficiently rolled the frame *M* is shoved back, leaving the cup *t* protruding and still holding the end of the cigar. The wrapper is then applied to the large end first, the fingers *e'* being drawn back at the instant they pass the end of the wrapper, so as to avoid tearing it or shoving it away, and instantly return above it, and are brought down upon it, catching and holding it firmly between the projecting end of the upper finger and the outer surface of cup *t*, whereby it is drawn in and carried around with them, and wound spirally around the filler, the wrapper being held and guided in its winding by the hand of the operator, the conical rollers *n n* fitting it nicely to the point.

This feature of having the end of the wrapper rest or held upon some solid substance I consider of special importance, as my experiments in this line have demonstrated the impossibility of holding the wrapper with sufficient firmness by pressing it against the body of the cigar itself, as the latter will yield and let the wrapper slip, and thus prevent it from being wound sufficiently tight. For accom-

plishing this object it is immaterial whether the end of sleeve *s* is made cup-shaped or solid, and simply arranged to abut against the end of the cigar, instead of inclosing it, as described, the essential requisite being that there should be a solid substance for the end of the wrapper to be pressed against to hold it securely, which, of course, must be caused to revolve with the cigar when the wrapper is being wound. The large end is then cut off by a circular knife, which is mounted in a swinging frame so as to be brought in between the end of *t* and of the rolls, as shown and described in my former patent, before referred to, (but not shown here,) when the cigar is complete. To remove it from the machine, *K* is shoved back, releasing the pointed end, and at the same time roll *D* is thrown up, which permits the finished cigar to drop out below. The frame *N* is then shoved back, carrying *M* and shaft *s* with it. The rod *v*, being stationary, enters the cup *t* as the latter moves back, and pushes out the end that was cut off, and which remains in the cup *t* until thus forced out, this latter operation being the same as in my former patent.

It will be understood that, if desired, the disks *A* and *B* may be used separately, for the purpose of rolling fillers only; or, if found practicable, they may be dispensed with, and the rolling all be done by the rolls *C*, *D*, and *E*.

Having thus fully described my invention, what I claim is—

1. Mounting the roller *D* in such a manner that it can be moved in the arc of a circle without throwing it out of gear, substantially as and for the purpose set forth.
2. Forming a filler or body of a cigar by rolling it between two disks more or less inclined, substantially as shown and described.
3. Smoothing and cutting the wrappers for cigars substantially as herein shown and described.
4. Cutting the end of the cigar off by moving it past a knife fixed in position, substantially as shown in Fig. 1, and herein described.
5. The socket or cup *t*, arranged to operate, substantially as described, to hold and form the end of a cigar ready to receive the wrapper.
6. Providing the surface of the rollers with a series of cavities increasing in size and depth toward the center and decreasing toward the ends of the rolls, as shown and described.
7. The revolving and sliding fingers *e'*, for seizing and holding the wrapper, substantially as set forth.
8. Holding the end of the wrapper upon the cup *t*, or other device more unyielding than the cigar itself, said device being arranged opposite to the end of the cigar and caused to revolve with it, for the purpose of drawing the wrapper sufficiently tight.

Witnesses:

ISSACHAR A. HEALD,

H. B. MUNN,

PHILIP T. DODGE.