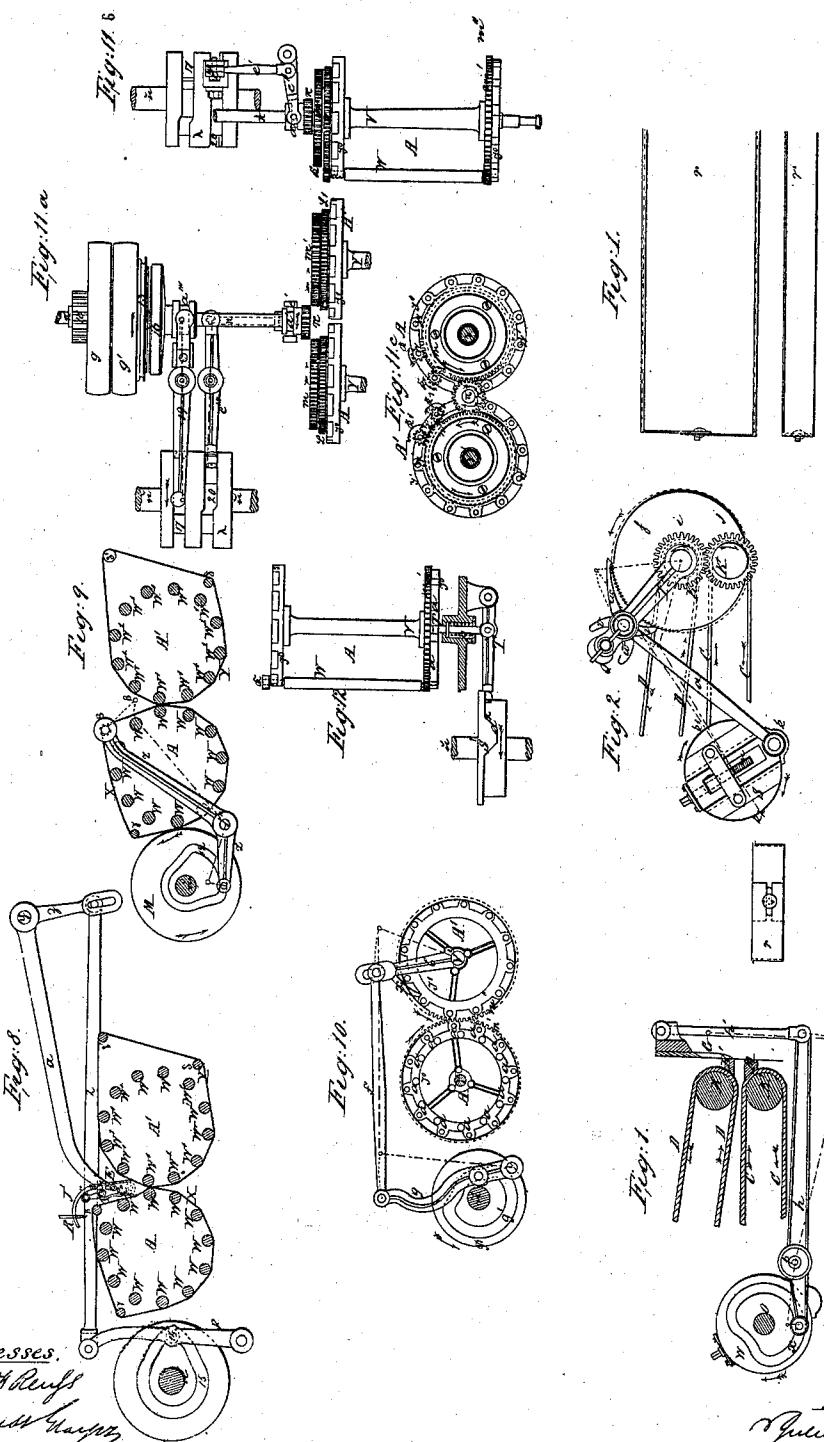


2 Sheets—Sheet 1.

J. DE BARY.
CIGAR MACHINE.

No. 32,405.

Patented May 28, 1861.



Witnesses.

W. H. B. B. B.
Augustus B. B.

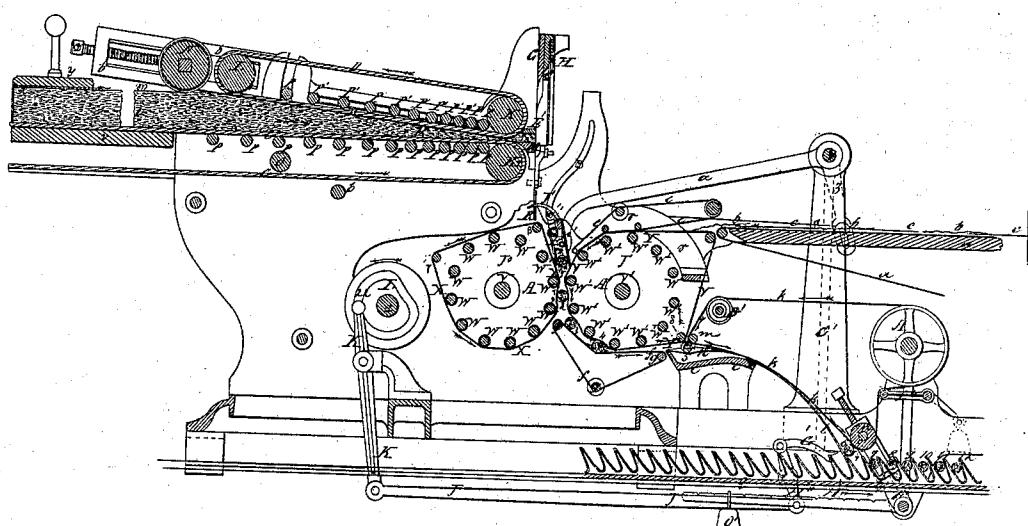
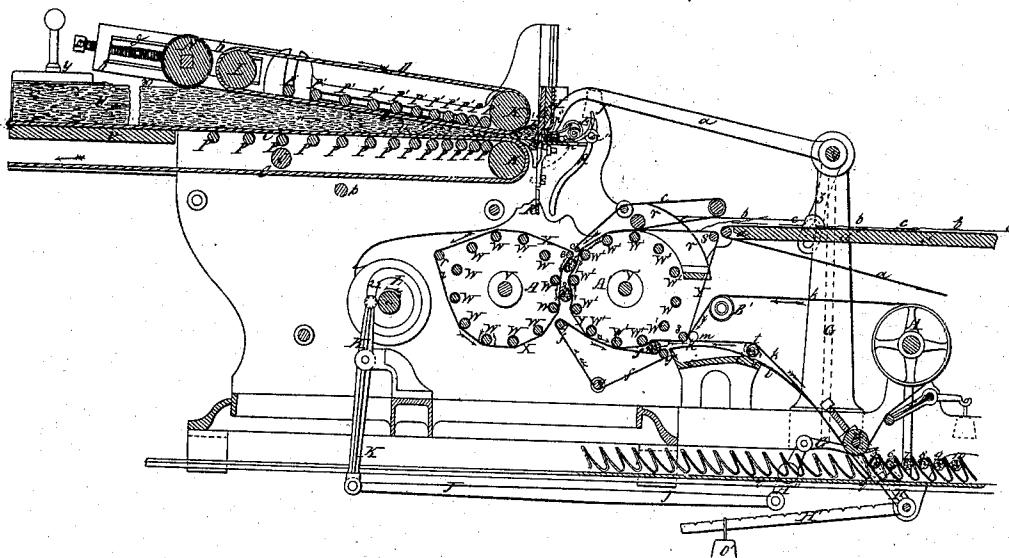
Inventor
Julius de Bary

2 Sheets—Sheet 2.

J. DE BARY.
CIGAR MACHINE.

No. 32,405.

Patented May 28, 1861.



Witnesses.

W. A. Ruff
Augustus Mayes

Inventor
J. De Bary

UNITED STATES PATENT OFFICE.

JULIUS DE BARY, OF OFFENBACH, HESSE, GERMANY.

IMPROVEMENT IN CIGAR-MACHINES.

Specification forming part of Letters Patent No. 32,405, dated May 28, 1861.

To all whom it may concern:

Be it known that I, JULIUS DE BARY, of the city of Offenbach, in the county of Offenbach, Grand Dutchy of Hesse, Germany, have invented a new and Improved Machine for Manufacturing Cigars; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

Sheet I represents a longitudinal section of my machine in the position where the tobacco to form a core is delivered into the rolling mechanism. Sheet II represents a longitudinal section of the machine, showing the manner of making the core. Sheet III, Fig. I, shows the manner of operating the knife, and Fig. II the mechanism of the feeding apparatus. Sheet IV represents several parts of the machine in detail, to be hereinafter referred to.

The tobacco or leaves U, intended for the interior or cores of cigars, having been deprived of their fibers and submitted to the necessary desiccation, are laid upon the endless strap or band C, Sheets I and II. This strap C passes over rollers. The hindmost roller (not shown in the drawings) is furnished with a screw to produce the proper tension on the strap. An endless band, D, is placed near the forward end, and conducts the tobacco, in combination with the band C, between the plates E' M. This strap D passes over the two rollers K L, and may be extended by the screw acting on the roller L. The tobacco is limited on each side by side rails. (Not shown in the drawings.) That part of the band C where the tobacco is placed is kept rigid by a board, v, while at its forward end, where the band D exerts a pressure upon the tobacco, it is supported by rollers P. The under side of the band D is likewise held in a straight position by friction-rollers P'.

Behind the roller L a roller, N, is situated, upon which a band of silk or other material, W, is placed, to the other end of which a weighted metal square, Y, is attached, which takes hold of the after part of the tobacco and assists moving the same forward. The pushing forward of the tobacco only takes place at intervals, so that an equally-compressed broad layer is brought before the open-

ing formed by the plates E' M, to be cut off by the knife G.

The manner of operating the bands C and D is as follows: Upon the axis of the roller K a ratchet-wheel, J, (see Fig. II, Sheet III,) and a cog-wheel, i, are keyed on, which latter drives a wheel, j, of the same size, fixed to the axis of the roller K'. The roller N, and consequently the metal square Y, is put in motion by a series of cog-wheels connecting the rollers L and N. A movement of the ratchet-wheel J in the direction of the arrow produces, consequently, a forward movement of the straps C and D of the metal square Y.

A wheel, S, Fig. II, Sheet III, is fastened on the shaft O, Sheet I and II, provided with a bearing, k, working in a slide acted upon by a screw, m, by which the position of this bearing may be rendered more or less distant from the center of the wheel S, whereby the motion of the ratchet-wheel j, and consequently of the bands, is regulated according to the size of the cigar to be made. This bearing k is connected through the rod a with the ratchet-lever T and ratchet-hooks v and w, and it will therefore be evident that by a revolution of the wheel S a movement of the ratchet-wheel j must ensue. The lever T carries an eccentric, Q, above the ratchet-hooks, the rotation of which acts upon the extrémités of the ratchet-hooks v and w, so as to raise said hooks, which causes the instantaneous stoppage of the bands. The required quantity of tobacco U, having been pushed through the plates E' and M, is cut off by the knife G, the action of which will be better understood by reference to Fig. I, Sheet III. A wheel, W, is fastened on the shaft O, provided with an eccentric groove, x, into which one end of the lever h, turning on the shaft or center y, works. The other end of said lever h is connected through the rod h' with the knife G, which works in rectilinear grooves. The rise and fall of this knife G at the desired time are in this manner produced by the rotation of the wheel W. Before the knife G acts upon the tobacco so as to cut off the required quantity for one core, a lever, a, has been moved before the opening formed by the plates E' and M, as shown in Sheet II. This lever a turns on a center or shaft, Y, attached to the upright stand C'. At the extremities of this lever a a machine,

E, is arranged, which takes hold of the tobacco. This machine E consists of two metal plates, n' and n'' , hinged together so as to form a jaw, and acted upon by a spring in such a manner as to keep the jaw open and allow thereby the tobacco to go into the same. When the knife G is moved downward to cut off the required quantity of tobacco, a projection, H, fast to said knife, comes in contact with a bolt, J', and pushes the same against the jaw, so as to counteract the spring, which had the tendency of keeping the jaw open, and closes at the same time the jaw, and does not allow it to open. The lever α , together with this machine E or jaw, is then made to descend, and is guided in its descent by the slide R, acting on the arm a'' , so as to present at its lowest point the opening or mouth of the jaw toward the angle formed by the bands X Y, Sheet I. The hook of the bolt J' hooks itself in descending into a hole of the projection R, which draws said bolt J' from the hinges of the pinchers n' and n'' , which are then opened by the action of their spring and allow the tobacco to fall into the angle formed by the bands X Y. This lever α is worked by a wheel, ρ , attached to the shaft n , (see Fig. VIII, Sheet IV,) provided with an eccentric groove, 15. The pin 14 of the lever P works in this eccentric groove, and the end of the lever P is connected by the rod Z with an arm, z , fast on the shaft y , and through which the arm or lever α is driven, which is fixed on the same axle, y .

X Y are two endless bands, which pass round rollers W and W' and round the small cylinders r , s , and s' , which latter are mounted on slide-guides in order to regulate the tension of the endless bands X and Y. The band X also touches a cylinder, β , to which an up-and-down motion is imparted, as will be hereinafter described. After the tobacco has reached the angle formed by the bands X and Y, and has been discharged therein, the roller β takes the position, as shown on Sheet II, which forces the tobacco to roll itself up. In order to prevent the particles of tobacco of which the core is composed from separating immediately, and while the same rolls itself up, coverings of tobacco-leaf, b , and of paper, c , or of either of them alone, is brought to the core while in the above-mentioned position and made to surround the said core. The wrapping-papers have the double object of protecting the tobacco from injury during its progress through the machine, and, further, to serve as a covering, so that it may not expand on leaving the machine, but retain its smooth and round form. The same wrapping-paper may be repeatedly made use of.

All cores of cigars made by machinery, if not covered immediately by the external or outer tobacco-leaf by which the cigar is finished, will become loose and partly unroll after coming from the machine if allowed to lay any length of time, and require a rerolling by hand before the outside tobacco-leaf can be put on. To prevent this necessity of

rerolling the cores forms the object and use of the wrapping-paper c , and any description of paper may be used for this purpose, as said wrapping-paper does not form any part of the cigar, but is removed when the outside tobacco-leaf is put on, and is then used again for another core.

The laying on of the binding or covering leaves b , as well as of the wrapping-papers c placed underneath them, is rendered continuous by means of the endless feeding-bands a a , Sheet I and II, passing over the divided platform d , and worked by suitable machinery in a succession of impulses simultaneously with the cutting off of a portion of tobacco for the interior or core of a cigar. All the covering-leaves b and paper c on the bands a a move forward in the direction of the arrow. That lying the farthest forward is moved from the bands a a upon the band Y, and remains in that position until the elastic bands X Y, and with them the tobacco which is to form the core of the cigar, begin to revolve. The covering-leaf and paper being pressed upon the band Y by the endless band e e , which moves at the same time and with the same velocity as the band Y, must necessarily also take part in its movement, and are thus conducted along toward the tobacco. The covering-leaf, and afterward the wrapping-paper, after their arrival at the tobacco, remain pressed against the band Y by the rotation of the tobacco, and thus, on its coming from the space formed by the tobacco on the band Y, comes into contact with the band X, which seizes it and carries it upward, from the upper part of which it is again led round the tobacco by the descending band Y. It is thus obvious that a rolling of the covering-leaf and wrapping-paper must take place. This rolling having been accomplished, the rotation of the tobacco still continues, but only in order to gain working time—that is to say, to obtain a certain number of portions of tobacco in the machine at once, the rotation of the core of a cigar in the position marked 1, Sheet II, is allowed to continue some time, and the core is then brought into the position marked 2, as will be hereinafter described. The machine is now made ready to receive a fresh core, the operation being performed as before, the first core remaining in the same position, 2, until the rotation of the fresh core commences. During the rotation of the fresh core and on the next interruption of the process for the reception of a new core it will almost have received its necessary rotundity and solidity. So soon as this second rotation ceases the first core or cigar comes into position 3, Sheet I, and lies in a space formed between the band Y and an endless band, f . It remains stationary in this position during the supply of a new core; but on the commencement of the rotary movement it is brought by the bands Y and f beyond the roller g to the beginning of the conducting-platform i , over which an elastic cloth, h , is fastened,

which extends to the conducting-plate *l*, attached to the lower end of the platform or frame. When the cigar or core leaves position 3, Sheet I, for position 5, no rotating motion is communicated to the same until it has passed the roller *g*, as both bands *Y* and *f* move in the same direction and at the same speed. In position 5, Sheet I, the endless band *Y* leaves the cigar, which is seized by the band *k* and rolled over the elastic cloth *h'*, fastened to the platform *i*, and over the conducting-plate *l* till it arrives at position 6, Sheet I, under the roller *n*, which is pressed by a weight against the spring-plate *l*, and, rolling continually forward, it is deposited in a notch in the frame *g*, which frame serves to receive the cigars. The platform *i* and spring-plate *l*, upon which the cigar rolls from position 5 to position 6, are so contrived that the cigar continually becomes more compact. This rolling may therefore be considered as a continuation of the rotary movement.

The up-and-down motion of the roller *β* is produced by the eccentric groove 12, Fig. 9, Sheet IV, attached to a wheel, *M*, mounted on the shaft *u*. Into the eccentric groove 12 the one end of the lever *T* works, oscillating about the point *l'*, and the other end of said lever *T* carries the roller *β*. The rotation of the wheel *M* communicates, therefore, the desired motion to said roller *β*.

The intermitting motion of the endless bands *X* and *Y* is effected, and the construction of the mechanism of the drums around which the same are stretched, and the manner of operating the same, is as follows: On the shaft *V*, Fig. 11^a and 11^b, Sheet IV, two disks, *Y°* *Y'*, are fixed, carrying twelve rollers, *W*, while the driving-shaft *V'* receives the disks *T'* and *T*, which carry twelve rollers, *W'*. Fig. 11^a, Sheet IV, shows one end of these rollers *W* and *W'*, which carry on their ends pinions *R* and *R'*, gearing into the wheels *L* and *L'*, fast to the disks *Y°* and *Y'*. To these wheels *L* and *L'* wheels *M* and *M'* are fastened, to which a differential motion is imparted by the wheel *N*. To increase the friction of the surfaces of these rollers *W* and *W'*, they are covered with thin caoutchouc or its equivalent. These disks *Y°* and *Y'*, together with their axles and the rollers, form the two drums *A* and *A'*. Over the rollers *W* of the drum *A* the endless band *X* (composed of india-rubber or any other elastic substance) is stretched, and over the rollers *W'* of the drum *A'* the elastic band *Y*. The tension of these bands may be increased or lessened by the extending-rollers *γ* and *γ'*, Sheet I and II. These tension-rollers, moreover, serve for guiding the endless elastic bands, for which purpose they are provided with conical flanges. The band *X* also passes over the roller *β*, as has been before mentioned. The gearing of the wheels *M* and *M'* can be broken at a certain moment by the retreat of the wheel *N*, as will be hereinafter described. On the driving-shaft *π* two pulleys, *9* and *9'*, are placed, which

turn loosely upon the axle *π*. The pulley *9* has on one side a friction-plate, *13*, against which, at certain times, the plate *16*, movable on the axle *π* on a wedge, is pressed, and upon the other side the pulley *9'* has a nave, upon which the pulley *9* turns loosely, and upon which, besides, another driving-wheel, *18*, is keyed, which, by means of an immediate driver, sets the axle *u* into continuous motion. This axle *u* makes exactly the same number of revolutions as the number of finished cigars or cores. The pulley *9* receives its motion from any moving power through a driving-strap. When the pinion *N* is in gear with the wheels *M* and *M'*, the disk *16* is pressed against the friction-plate *13* of the pulley *9'* in the following manner:

In a neck or groove, *17*, formed on the wheel *λ*, one end of a cylindrical spring-gudgeon on a lever, *19*, takes, which at its other extremity takes into a groove, *a''*, formed on the friction-disk *16*. As the neck *17*, in which the gudgeon takes, is formed eccentrically for a part of its length, it causes the lever *18* to oscillate, which consequently transmits a similar motion to the said disk *16* and presses or draws the same alternately to and from the friction-plate *13* of the pulley *9'*. When the disk *16* is in contact with the driving-pulley *9'*, the revolution of the shaft *π* puts the pinion *N* in motion, which, when thrown in gear with the wheels *M* and *M'*, communicates motion to the same, and consequently to the rollers *W* and *W'* and the endless bands *X* and *Y*. The cylinder or roller *β* has been brought in a position as shown on Sheet II, which prevents the tobacco from moving out of its position, and in consequence of the friction against the bands cannot remain motionless, but produces a rotation of the tobacco, and a roll of tobacco is thereby formed. By the motion of the band *Y*, however, as also by the simultaneous turning of the band *ee*, the binding or covering leaf *b* and the paper *c*, after a few revolutions, are brought to the said roll and wrapped round it, as above described. When the rotation of the roll or cigar in the position 1, Sheet II, ceases, the friction-disk *16* is made loose and the driving-wheel *N* put out of gear. The wrapping-roller *β* at the same time is made to rise, as above described, and the drums *A* and *A'* are moved some distance round, by which the cigar or core moves from position 1 to position 3.

For the purpose of disengaging the wheel *N* from the wheels *M* and *M'*, the wheel *M*, which moves along a wedge fixed upon the shaft *π*, is provided with a groove, *a'*, (see Figs. 11^a and 11^b, Sheet IV,) into which a lever, *e'*, takes, connected through the rod *e* with the lever *e''*, which latter is operated by an eccentric groove, *20*, provided on the wheel *λ*. The above-mentioned movement of the drums *A* and *A'* consists in their being both turned in the same direction one-twelfth ($\frac{1}{12}$) of their circumference and firmly kept in this position till a repeated movement. For

for this purpose the drums A and A' are connected together at one end by gearing m' and m'' , Fig. 10, Sheet IV. On the shaft V' of drum A' a lever, E, is placed, having a ratchet-hook, x, affixed, falling into hollows at equal distances apart, and which, on the moving forward of the lever E, pushes on the drum A', and with it the drum A, one-twelfth of their circumference in the direction of the arrows. The lever E is operated by means of an eccentric groove, g', provided on a wheel, P, fast on the shaft u, operating the lever g, which latter is connected through the rod f with the lever E. The drums are firmly held in their positions, whenever required, by the stop-tenon T, Fig. 12, Sheet IV, fixed to the lever T'. A disk, S', is fixed on the driving-shaft u, provided with a projection, d², which produces the oscillation of the lever T', and thereby withdraws the pin T out of the holes a, Fig. 10, Sheet IV, before the forward movement of the drums is effected. This stop-tenon T passes through an aperture in the side frame of the machine, and is pressed by a spiral spring, p, against the drum Y°, where, when this drum arrives at the proper position, it falls into one of the holes a. Simultaneously with the forward movement of the drums the roller β , as before mentioned, has risen. The rolling-machine, on the falling of the tenon T into one of the holes a, stands in the same position as represented on Sheet I, and therefore, on the completion of this period of the work, all the operations for a new cigar can be repeated. When the core passes from position 2 to 3, Sheet I, the band X leaves it, and it is taken by the endless band f, which is supported by three rollers, g g' g'', and brought upon the frame i, which is covered by an elastic band, h, where, in position 5, Sheet I, the strap k takes hold of the core, which continues the rotation of the core and draws the same over the cushion h of the platform i and along the spring-board l to and beneath the roller n. The strap k passes around the rollers A'', B', m, and n. As soon as the core arrives beneath the roller n the band k loses its tension through the core, which pushes back cylinder n; but in order to make the core enter the receptacle in the frame q, the cylinder

n regains its former position by the lever H' and its counter-weight O', fixed to the lever F and operating said roller n. The lever f⁴, provided with a counter-weight, maintains the tension of the band k. The receiving-frame q, sliding on rails fast to the frame, advances one compartment each time that the preceding motion is repeated, which is effected by means of a ratchet, G', (see Sheets I and II,) which works in ratchet-teeth in the side of frame q, and is moved by the lever K through the ratchet-lever H'', connected together by the rod J. The upper arm of the lever K is furnished with a roller, which runs in an eccentric groove, 22, in the plate L, keyed upon the shaft n.

Having now described the construction and manner of operation of my machine, what I claim as my invention, and desire to secure by Letters Patent, is—

1. The conducting and compressing of the tobacco intended for the interiors or cores of the cigars by means of the bands C and D, in combination with the metal square Y, the whole being constructed and operated in the manner described.

2. The arrangement and construction of the jaw E on the end of the arm a, and the manner of operating the same for the purpose of receiving the portions of tobacco intended for a core of the cigar, which is cut off by the descent of the knife G, and delivering the same in the rolling-machine.

3. The use and arrangement of the roller β , operating the endless band X, in the manner and for the purpose substantially as described.

4. The employment of wrapping-papers in the manufacture of the cores for cigars, in the manner and for the purpose described.

5. The described arrangement of the machinery for the manufacture of cigars, the whole being substantially constructed and operating in the manner herein described and specified.

JULIUS DE BARY.

Witnesses:

W. F. REUSS,
AUGUST GLAYSE.