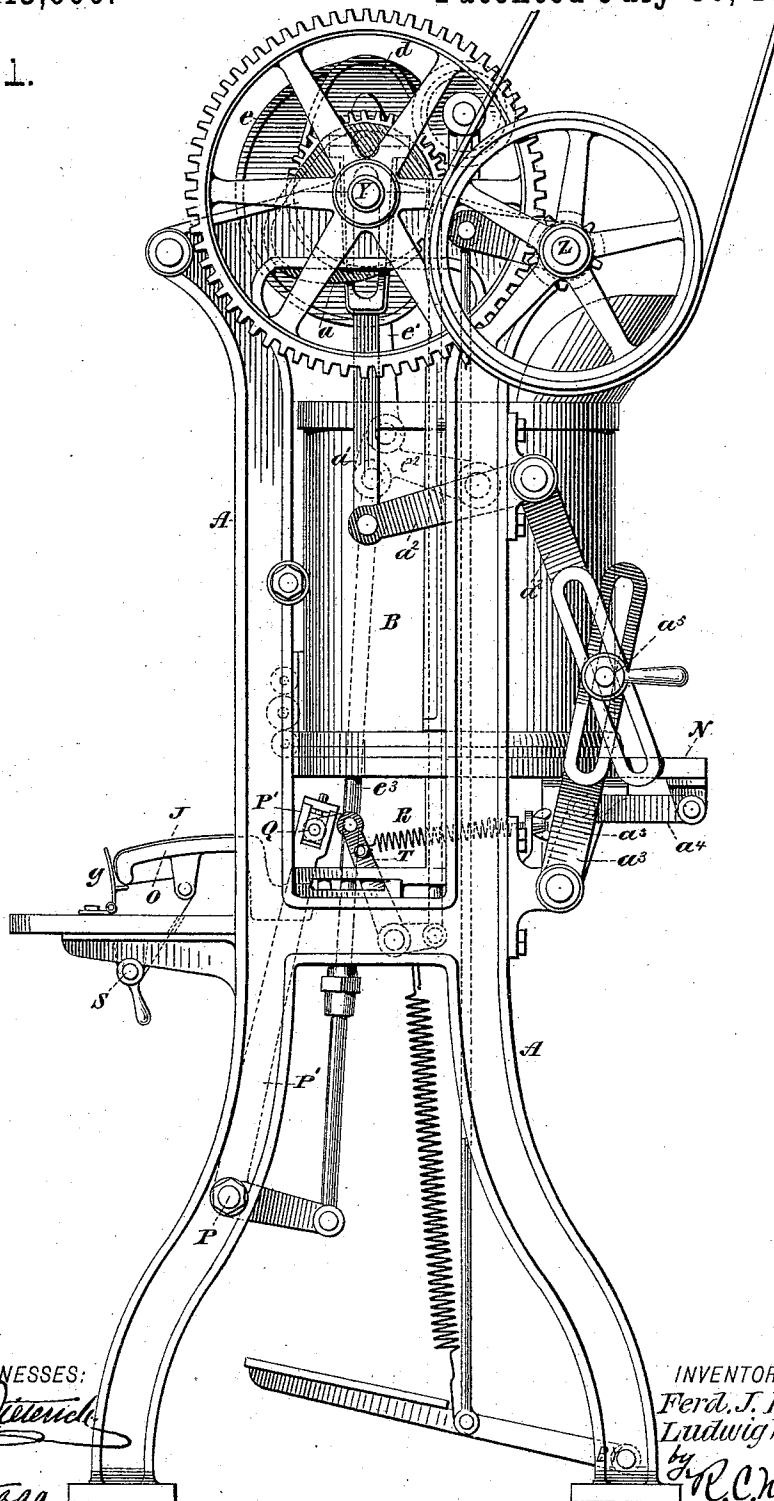


6 Sheets—Sheet 1.

No. 543,600.

Patented July 30, 1895.

Fig. 1.



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Gustav Dietrich

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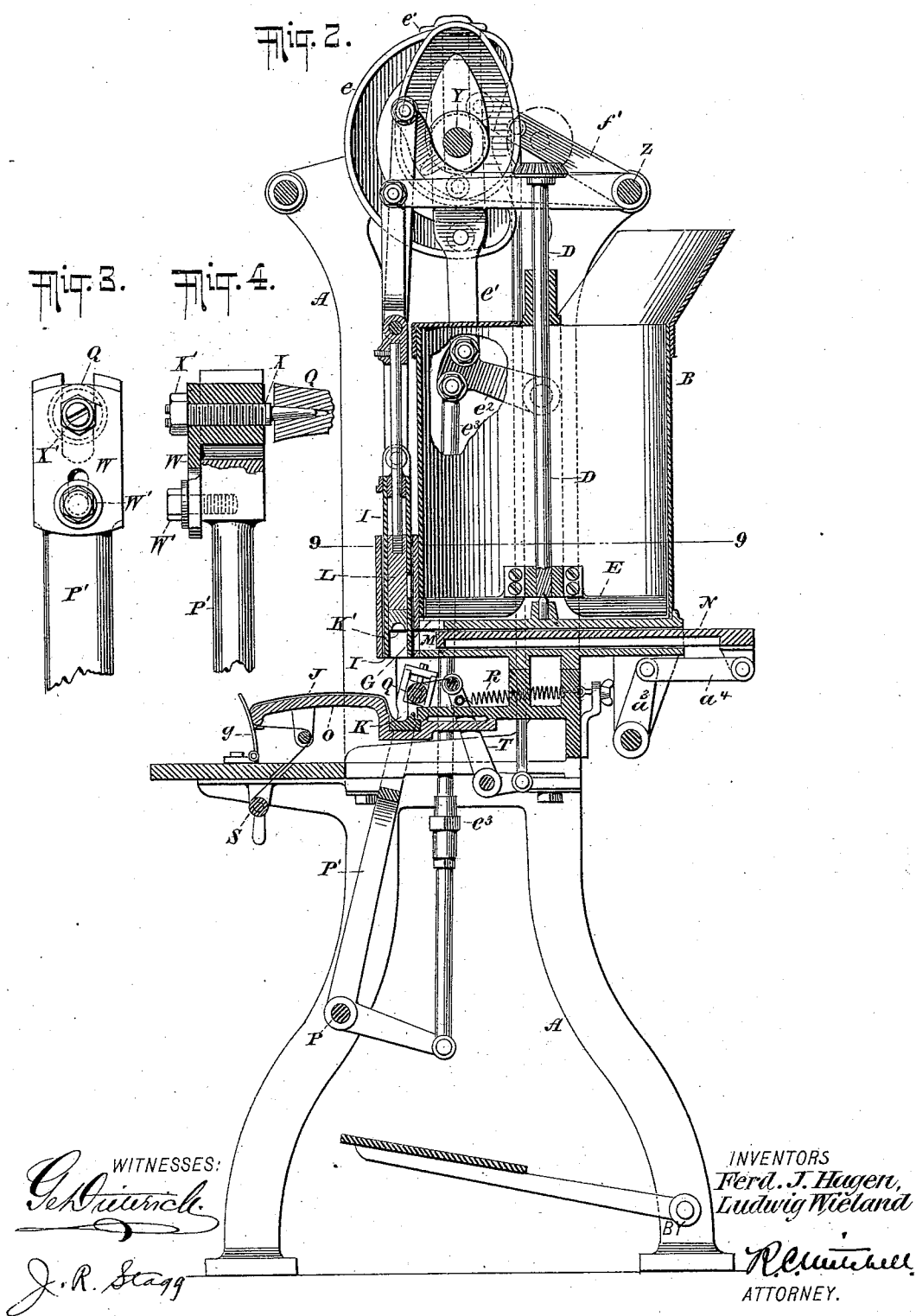
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6 Sheets—Sheet 2.

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CIGAR BUNCHING MACHINE.

No. 543,600.

Patented July 30, 1895.



(No Model.)

6 Sheets—Sheet 3.

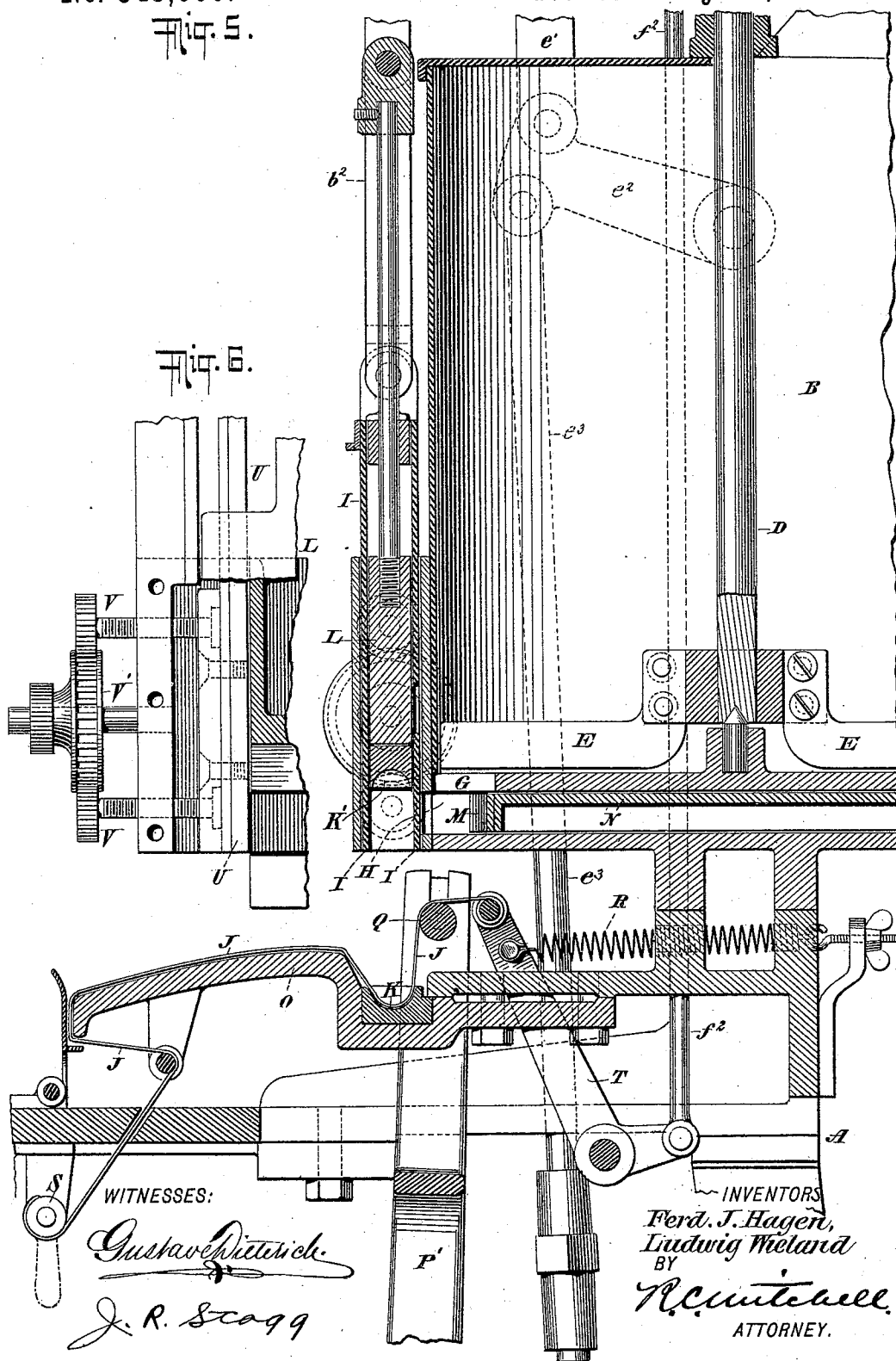
F. J. HAGEN & L. WIELAND.
CIGAR BUNCHING MACHINE.

No. 543,600.

Patented July 30, 1895.

Fig. 5.

Fig. 6.



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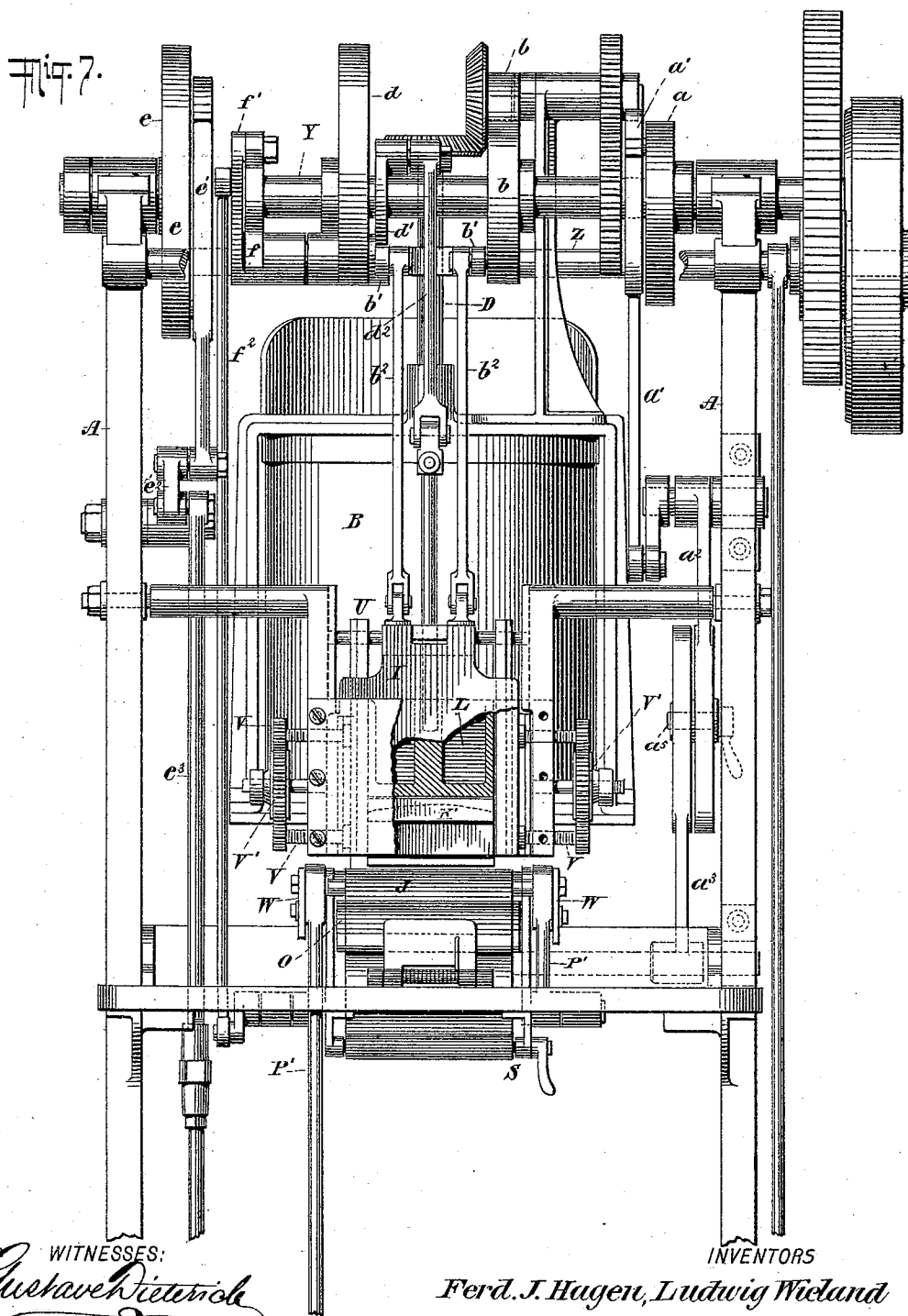
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F. J. HAGEN & L. WIELAND.
CIGAR BUNCHING MACHINE.

No. 543,600.

Patented July 30, 1895.



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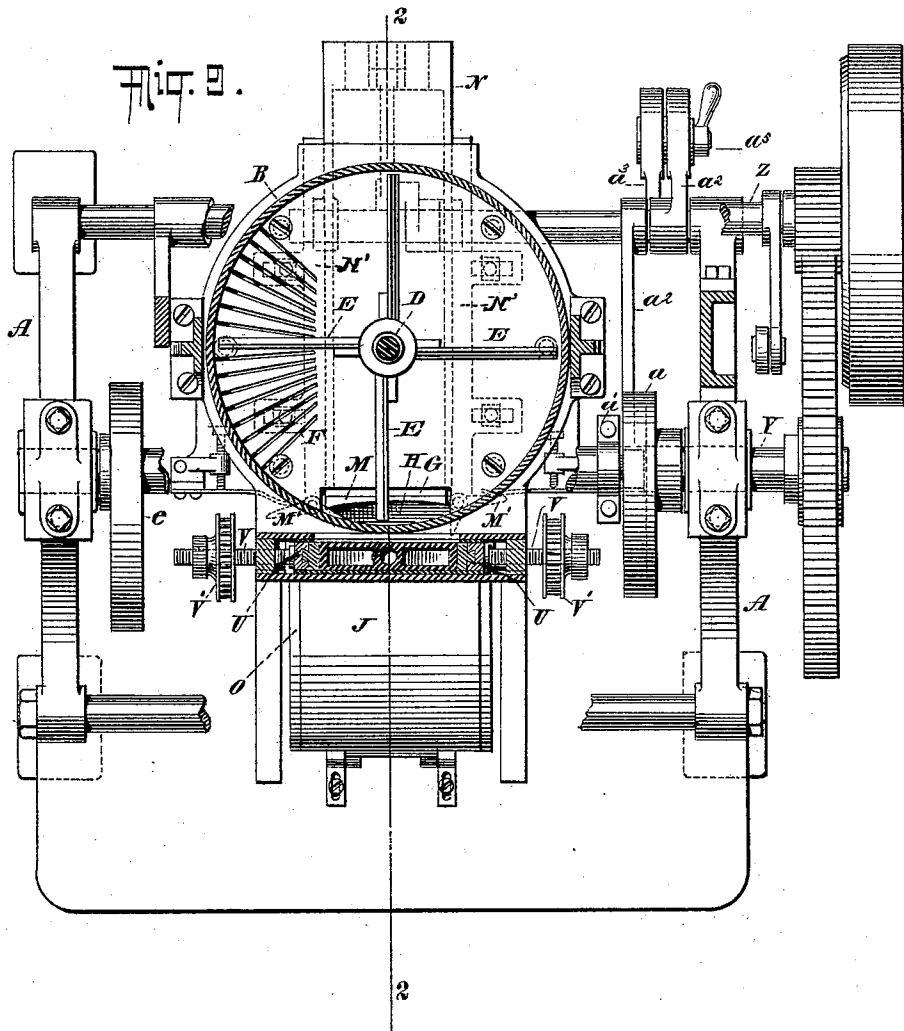
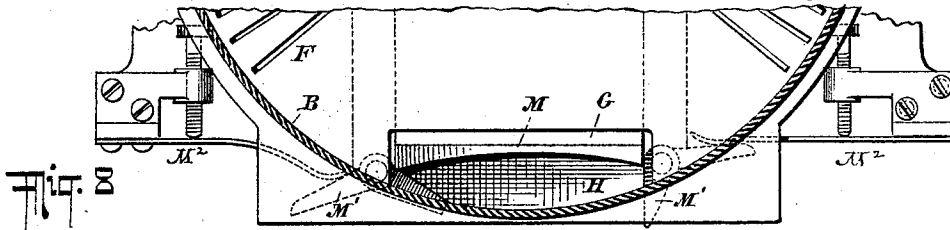
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6 Sheets—Sheet 5.

No. 543,600.

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(No Model.)

6 Sheets—Sheet 6.

F. J. HAGEN & L. WIELAND.
CIGAR BUNCHING MACHINE.

No. 543,600.

Patented July 30, 1895.

Fig. 10.

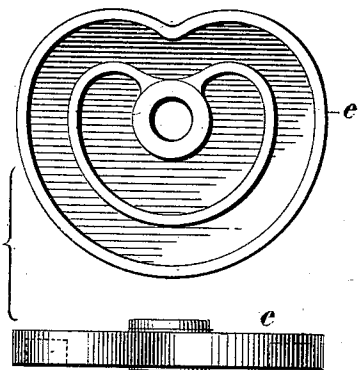


Fig. 11.

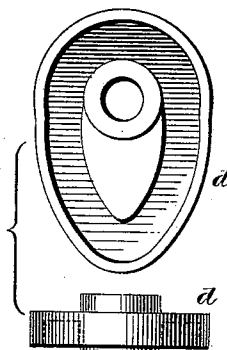


Fig. 12.

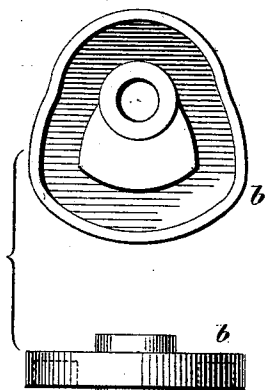


Fig. 13.

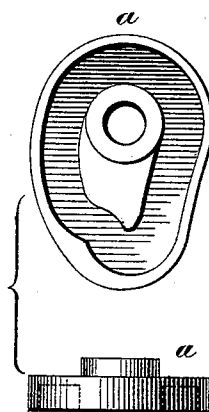
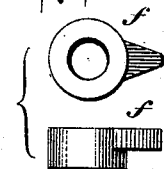


Fig. 14.



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UNITED STATES PATENT OFFICE.

FERDINAND J. HAGEN AND LUDWIG WIELAND, OF NEW YORK, N. Y.,
ASSIGNORS, BY MESNE ASSIGNMENTS, TO THE EXCELSIOR CIGAR MA-
CHINE COMPANY, OF SAME PLACE.

CIGAR-BUNCHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 543,600, dated July 30, 1895.

Application filed August 23, 1894. Serial No. 521,074. (No model.)

To all whom it may concern:

Be it known that we, FERDINAND J. HAGEN and LUDWIG WIELAND, citizens of the United States, residing at New York, in the county
5 and State of New York, have invented certain new and useful Improvements in Cigar-Bunching Machines, of which the following is a full, clear, and exact specification.

Our invention relates particularly to machines for forming cigar-bunches; and it consists in the mechanism hereinafter fully described, which automatically measures off
10 and feeds loose tobacco from a hopper into a molding device, where it is compacted into a charge approximating the desired shape of the cigar, from whence it is passed to a rolling table, where it receives the binder and is given the finishing touches.

The objects of our invention are several, simplicity, compactness, adjustability, accessibility of operative parts, and effectiveness of operation being among the most important.

By our invention the tobacco is also automatically freed from particles of grit and sand,
25 and the cigar-bunches possess remarkable uniformity of texture.

Our invention is illustrated by the accompanying drawings, in which—

Figure 1 is a side elevation of the entire machine. Fig. 2 is a central vertical section of the same on the plane of the line 2 2, Fig. 9. Fig. 3 is a side elevation of one of the details. Fig. 4 is a front elevation, partly in section, of the detail shown in Fig. 3. Fig. 5
35 is an enlarged view of a portion of the mechanism shown in vertical section, Fig. 2. Fig. 6 is a front elevation of another detail of the machine. Fig. 7 is an enlarged front elevation of the upper part of the machine. Fig. 8 is a plan view of a portion of the hopper and measuring-chamber below same. Fig. 9
40 is a plan view of the machine, partly broken away to show a horizontal section of the hopper and vertical plunger mechanism, said section being taken on line 9 9, Fig. 2. Figs. 10, 11, 12, 13, and 14 are each side elevations and plan views combined of the different forms of cams used on our machine.

Similar letters refer to similar parts throughout the several figures.

A is a frame of an appropriate form supporting the entire mechanism.

B is a hopper fixed in the frame.

D is a revoluble vertical shaft mounted in the hopper B. Near the lower end of this shaft are fixed blades E E extending radially therefrom and preferably pitched at a slight angle to the bottom of the hopper. When the shaft D is revolved, these blades cause the loose tobacco contained in the hopper to be agitated, effecting the thorough mixture of the same.

Perforations F F formed in the bottom of the hopper permit particles of grit or sand contained in the tobacco to drop therethrough, thereby freeing it from the same. The agitation of the loose tobacco by the blades E E facilitates the eradication of the aforesaid grit or sand. The number and form of these perforations F F are immaterial, so long as they are not sufficiently large to permit the tobacco itself to be forced therethrough.

G is a discharge-opening in the bottom of the hopper, through which the loose tobacco drops into a measuring-chamber H. From this measuring-chamber, at intermittent periods, the tobacco is forced through a horizontal opening in a feed-chute I, which conducts it down to the rolling-apron J, which at that moment rests in a form-section K. Immediately following, a vertical plunger L descends and compresses the tobacco thus deposited upon the apron into a charge of the desired shape. A form-section K', corresponding to the form-section K, is attached to the lower end of the plunger L. The shape of the charge may be varied by substituting form-sections K K' of suitable patterns.

It is obvious that some means should be afforded in the measuring-chamber H to graduate the amount of the tobacco which is to be forced into the feed-chute, for otherwise in the tapering end of the charge the tobacco might be much more closely compacted than at intermediate points. We provide, therefore, a shaper M in the rear of this opening, which is secured to and carried by a horizontal plunger N, which intermittently forces the tobacco from the measuring-chamber H into the feed-chute I, as above referred to. In ad-

dition to the shaper M, we also provide clips M' M', pivoted, as shown, on each side of the horizontal plunger and pressed by suitable springs M² M², so as to cause the forward end of the clips to swing into the ends of the measuring-chamber to decrease the capacity of one or both ends thereof, (see Fig. 8,) thereby limiting the quantity of tobacco in the ends of the charge. As the plunger N is advanced the clips M' M' are simply pushed back out of the way of said plunger until it is again retracted. After the charge has been compressed between the form-sections K K' it is grasped in a pocket or bight formed in the apron J and rolled over a table O by the bunching-roller Q. The surface of the table O is struck on an arc from the pivot-center P, upon which arms P' P', which support the bunching-roller Q, are hung. The upper end of these arms P' P' are slotted. (See Figs. 3 and 4.) Moving in these slots is a projection from a vertically-movable plate W, adjustably held to the arm P' by the set-screw W', which passes through a slot in the plate W to permit the said plate to be raised or lowered, thereby allowing the bunching-roller Q to be raised or lowered.

X is a screw-threaded bearing-pin extending through the plate W, upon which one end of the bunching-roller Q rotates. X' is a set-screw to prevent said bearing-pin X from being displaced. The tightness of the cigar-bunch is finally determined by the tension of the rolling-apron J, which is regulated by the roller or take-up S, around which one end of the apron may be wrapped. The opposite end of the apron is secured to a cross-bar extending between the lever-arms T T, hinged to the frame. A means of vertical adjustment of the side walls U U within the feed-chute I is shown in Fig. 6, in which V V are adjusting-screws projecting through the side of the fixed wall constituting part of the frame A. To the outer end of these adjusting-screws V V are fixed gear-wheels, each of the same size. The inner ends of the screws V V are provided with enlarged heads, which are loosely carried in the rear side of the vertical side walls U U. Between these wheels and loosely rotating on a pivot extending from the frame is a pinion-wheel V' meshing with said gear-wheels at the ends of the screws V V. By turning the wheel V' in one direction or the other, the screws V V are advanced or retreated, thereby facilitating the adjustment and insuring the perpendicularity of the walls U U.

The mechanism thus far described operates directly upon the charge to determine its size, its shape, and consistency, whereas the parts hereinafter explained relate to the mechanical means whereby motive power is transmitted to the various parts, and whereby the adjustment of the said parts may be facilitated.

Y is a horizontal shaft carried by suitable bearings in the upper part of the frame A. Power is transmitted to this shaft by any de-

sirable means, the form shown in the drawings hereunto annexed being a system of gearing with a suitable clutch mechanism to throw said gearing into or out of engagement for the purpose of starting or stopping the machine.

Z is a cross-bar fixed to the frame and located to the rear of and parallel to the shaft Y. Upon this cross-bar several rocking arms, hereinafter referred to, are loosely hung. These arms are actuated in the ordinary manner by cams, hereinafter referred to.

α is the cam which operates the horizontal plunger, through the medium of a cross-head α' , the carrying-levers $\alpha^2 \alpha^3$, and the connecting-rod α^4 . An adjustable stop α^5 , fixed in a slot in one of the adjacent ends of the carrying-levers α^2 and adapted to slide in a corresponding slot in the end of the adjacent carrying-lever α^3 , determines the throw of the horizontal plunger N. For instance, if the stop is located in the upper end of the slot in the carrying-lever α^2 the movement of the horizontal lever will be slight, whereas if it is located in the lower end of said slot the movement of the horizontal lever will be much greater.

The feed-chute I is raised and lowered at intermittent periods by the cam b , which, by ordinary cam-action, raises and lowers a rocking arm b' , which carries at its outer end the connecting-rods $b^2 b^3$, which connect with the upper end of the feed-chute.

The vertical plunger L is intermittently operated by the cam d , through the medium of the upwardly-curved rocking arm d' , loosely pivoted at its rear end to the cross-bar Z and at its forward end to the connecting-link d^2 .

The roller Q, carrying a bight in the apron J, is operated by a cam e through the medium of the cross-head e' , which connects with the rocking arm e^2 , which supports a connecting-rod e^3 , communicating directly with the carrying-levers P' P'. The cam f at intermittent periods causes the carrying-levers T T, which support at their upper end a cross-bar, to which is attached the apron J to swing toward the rolling table, so that sufficient slack will be given to the apron J to permit it to rest in the form-section K. (See Figs. 1, 2, and 5.) This cam f causes the rocking arm f' to be raised and lowered, and this rocking arm communicates directly to the carrying-levers T T through the medium of the connecting-link f^2 . When the nose of the cam f passes the rocking arm f' , a spring R draws the upper end of the carrying-levers T T away from the rolling-table O, causing the apron to tighten.

The relative action of the parts is substantially as follows: Assuming the parts to be in substantially the position indicated in Fig. 2 to start with, the tobacco first passes into the measuring-chamber, where it is slightly compressed by the action of the inclined blades E E. The feed-chute I next descends until

the horizontal opening is in front of the measuring-chamber. The horizontal plunger is then actuated, pushing back the forward ends of the clips M' M' and forcing the tobacco contained in the measuring-chamber into the said chute. The plunger N immediately retracts to its original position and the clips M' M' swing back out of the way of the vertical plunger to their original positions. The vertical plunger L then descends, compressing the tobacco between the forms K K'. The chute I and the vertical plunger L then retract to their original positions and the carrier-arms P' P' are actuated, causing the roller Q to advance toward the rolling-table, carrying thereto a bight of the apron J and forming a pocket in which the charge rests. As soon as the roller advances to the rolling-table O the carrier-levers T T are retracted by action of the spring R, giving to the apron the proper tension. In operation it is customary for the attendant to place the binder upon the rolling-table, preferably so that one edge of said binder projects slightly into the bight in the apron, so that as the bunching-roller Q advances to and over the rolling-table O the charge and binder are rolled together in the pocket until the roller has passed entirely off the end of the table, when the pocket opens and the finished cigar-bunch drops into a suitable receptacle g. The carrier-levers P' P' and roller Q then retract to the original position. On the backward movement of said levers, when the bunching-roller reaches the rear edge of the rolling-table the cam f advances the carrier-levers T T into the position shown throughout the drawings, so as to leave a bight in the apron. (See Fig. 5.)

The shaft D in the hopper is rotated through the medium of a counter-shaft and beveled gear, as shown in Fig. 7.

N' N' are adjustable walls on each side of the plunger N, and to the forward ends of these walls are pivotally connected, by preference, the clips M' M'. The distance between the two sets of side walls N' N' and U U is substantially the same, and this distance determines the length of the bunch. Plungers of varying widths may be provided to suit the space between said side walls.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

1. In a cigar bunching machine, a hopper mounted in a frame and a vertical shaft loosely mounted in the hopper, said shaft carrying radially arranged blades E E, said hopper being provided with perforations in the bottom thereof to permit sand or grit to fall there-through while the tobacco is being agitated or mixed, substantially as described.

2. In a cigar bunching machine, the combination of a hopper having perforations radially around the bottom and having a feed discharge opening therein, a revoluble shaft

having agitator blades extending radially therefrom mounted in said hopper, a measuring chamber located directly underneath the discharge opening, with the horizontal plunger for intermittently forcing the tobacco out of the measuring chamber, and with the bunch forming mechanism, substantially as described.

3. In a cigar bunching machine, a measuring chamber, an intermittently reciprocating vertical feed-chute having a horizontal perforation in one of its sides, clips M' M' pivotally mounted at each end of the measuring chamber, one end of said clips being spring pressed, and with a horizontal plunger N for intermittently advancing the tobacco into the feed-chute substantially as described.

4. In a cigar bunching machine, the combination of the hopper mounted in the frame and having a discharge opening in its base, a measuring chamber located below said opening and communicating therewith, with a reciprocating feed-chute adjacent thereto, and with the horizontal reciprocating plunger, the clips M' M', and the bunching mechanism as described.

5. In a cigar machine, a feed hopper mounted in a frame a discharge opening in its base, a measuring chamber located directly below said discharge opening, in combination with a horizontal reciprocating plunger for intermittently forcing the tobacco out of the measuring chamber, a vertically reciprocating feed-chute perforated in the side adjacent to the hopper to permit the tobacco contained in the measuring chamber to be forced at intermittent periods into said chute, and extending below said opening for the purpose of closing one side of the measuring chamber when said chute is in its raised position, with the forming and bunching mechanism, substantially as described.

6. In a cigar machine, a feed-hopper mounted in the frame having a discharge opening in its base, a measuring chamber located directly below said discharge opening, in combination with a horizontal reciprocating plunger for intermittently forcing the tobacco out of the measuring chamber, a vertically reciprocating feed-chute having an elongated perforation or port in one side thereof and adjacent to the hopper, said chute extending below said elongated opening or port therein, to close the adjacent side of the measuring chamber when said chute is in its raised position, means for actuating said feed-chute to open at intermittent periods said measuring chamber, a vertically reciprocating plunger moving in said feed chute, and the rolling mechanism substantially as described.

7. The combination in a cigar bunching machine, of a feed hopper mounted in the frame, a measuring chamber located directly below said hopper and communicating therewith, a vertical feed chute perforated in one side, with a horizontal plunger moving in a plane

coincident with said measuring chamber, the carrying levers $a^2 a^3$, one lever being provided with a longitudinal slot in one end thereof, the other lever carrying an adjustable stop
5 a^5 which projects into and loosely moves in the slot in the adjacent carrying lever, substantially as and for the purpose specified.

8. In a cigar bunching machine, a feed-hopper having a discharge opening therein, a
10 measuring chamber located below said discharge opening, a vertical revoluble shaft mounted in said hopper, blades E E extending radially and horizontally therefrom, said blades being pitched at an incline and adapted
15 to move in a plane coincident with the plane determined by the bottom of the hopper, a bevel gear at the upper end of said shaft, with a counter shaft carrying a bevel gear

meshing with the said bevel gear on said vertical shaft, substantially as described. 20

9. In a cigar bunching machine, the combination of a measuring chamber, the plungers N L, the reciprocating chute I having side openings, there being an opening in one face of said chute through which tobacco is inter- 25 mittently forced by the plunger N adjustable side walls U U in said openings, the adjacent side walls N' N', the clips M' M' pivotally connected to the forward ends of the side walls N' N' with the rolling mechanism, sub- 30 stantially as described.

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