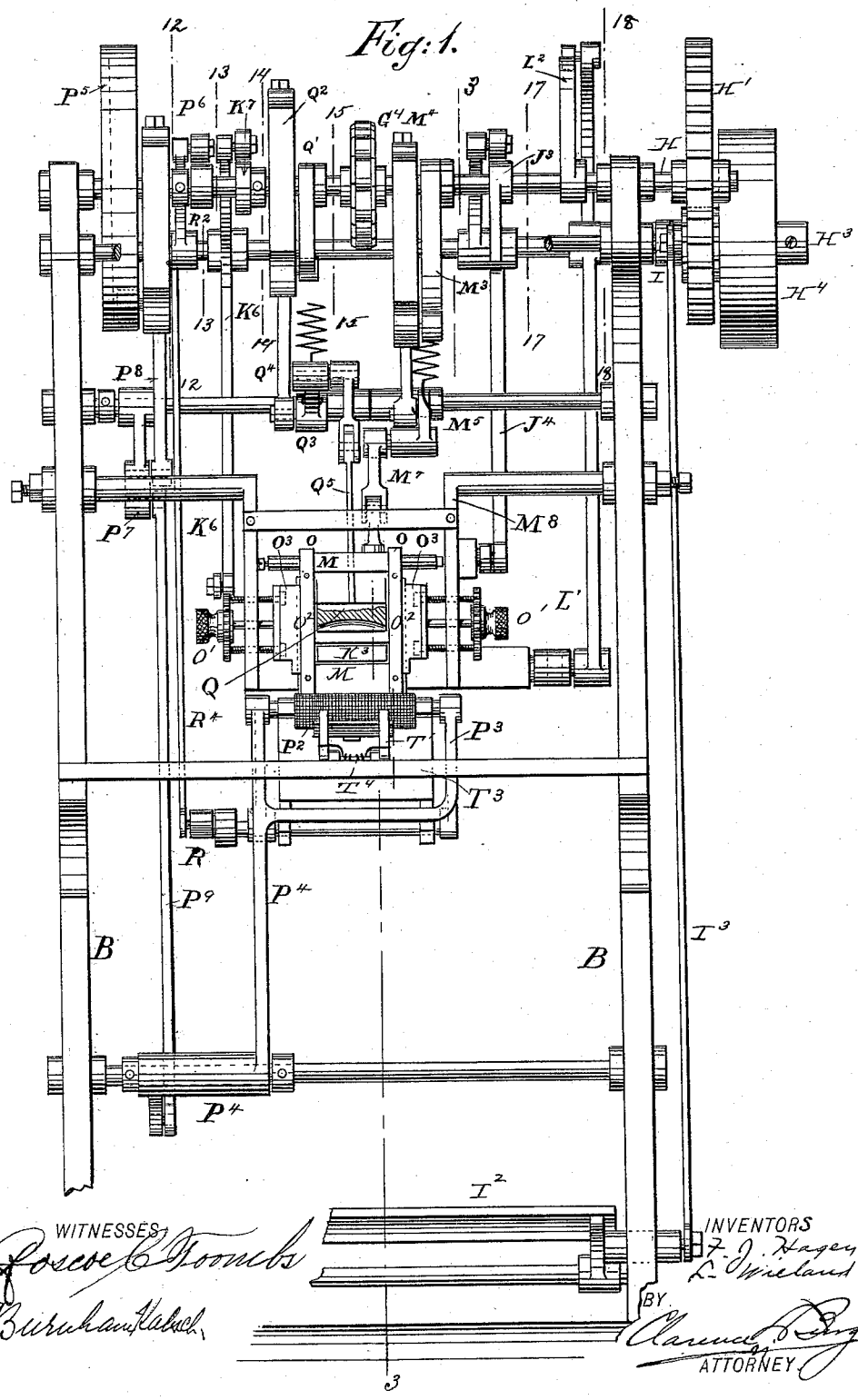
(No Model.) 6 Sheets—Sheet 1.

F. J. HAGEN & L. WIELAND.

CIGAR BUNCHING MACHINE.

No. 535,697. Patented Mar. 12, 1895.

Fig. 1.



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(No Model.) 6 Sheets—Sheet 2.

F. J. HAGEN & L. WIELAND.

CIGAR BUNCHING MACHINE.

No. 535,697. Patented Mar. 12, 1895.

Fig: 2.

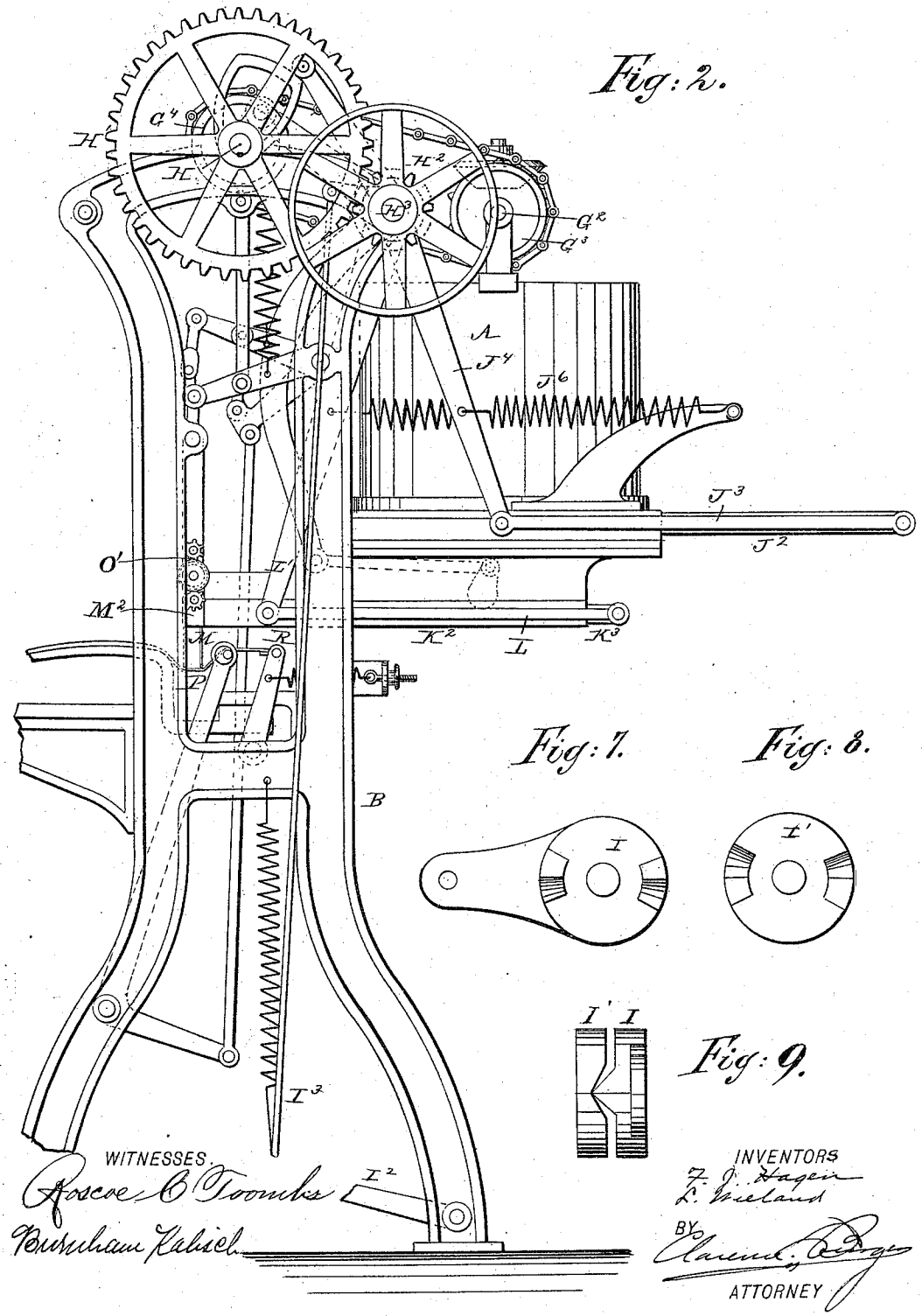

Fig: 7.

Fig: 8.

Fig: 9.

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F. J. HAGEN & L. WIELAND.

CIGAR BUNCHING MACHINE.

No. 535,697. Patented Mar. 12, 1895.

Fig: 3.

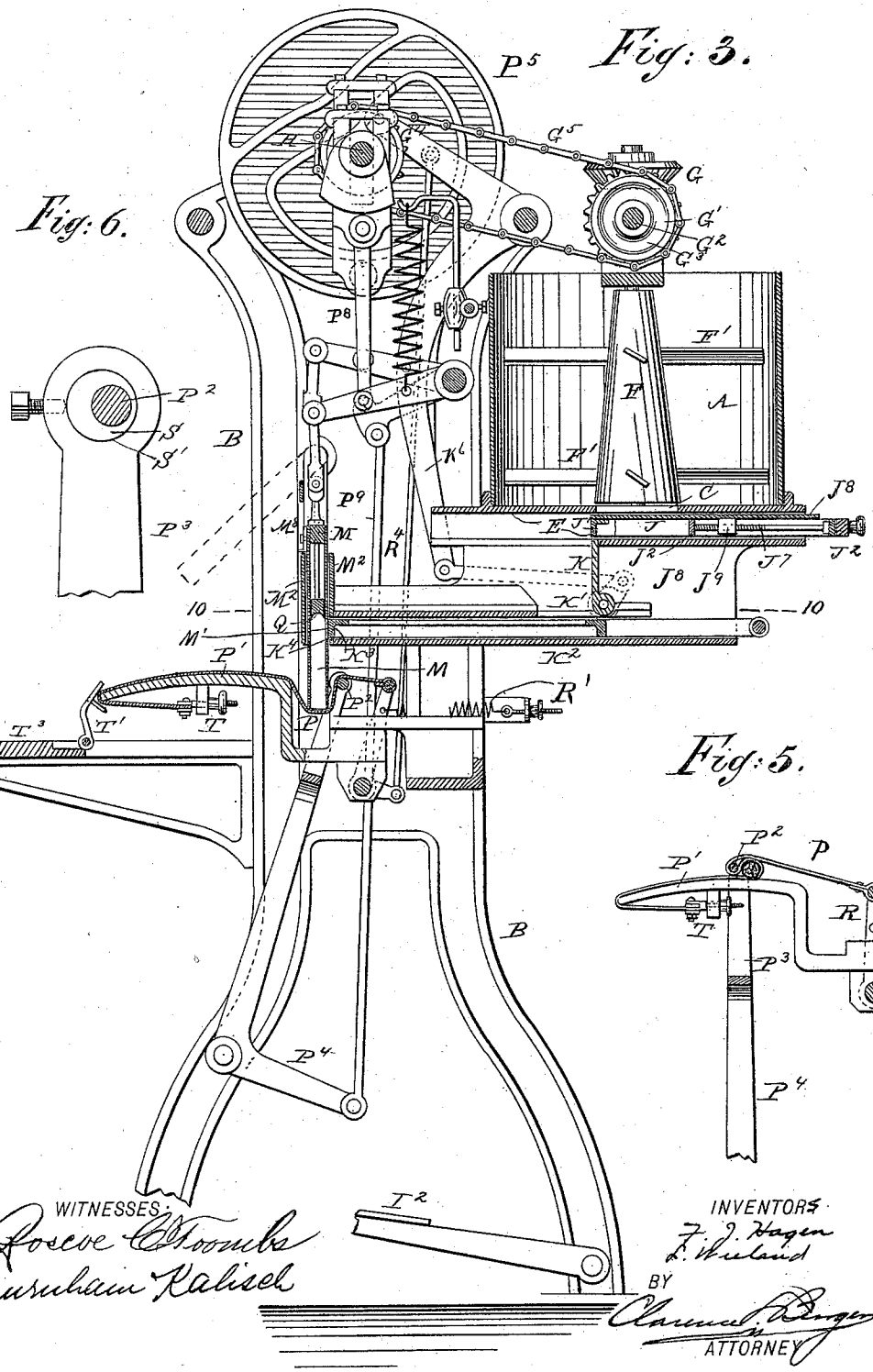

Fig: 6.

Fig: 5.

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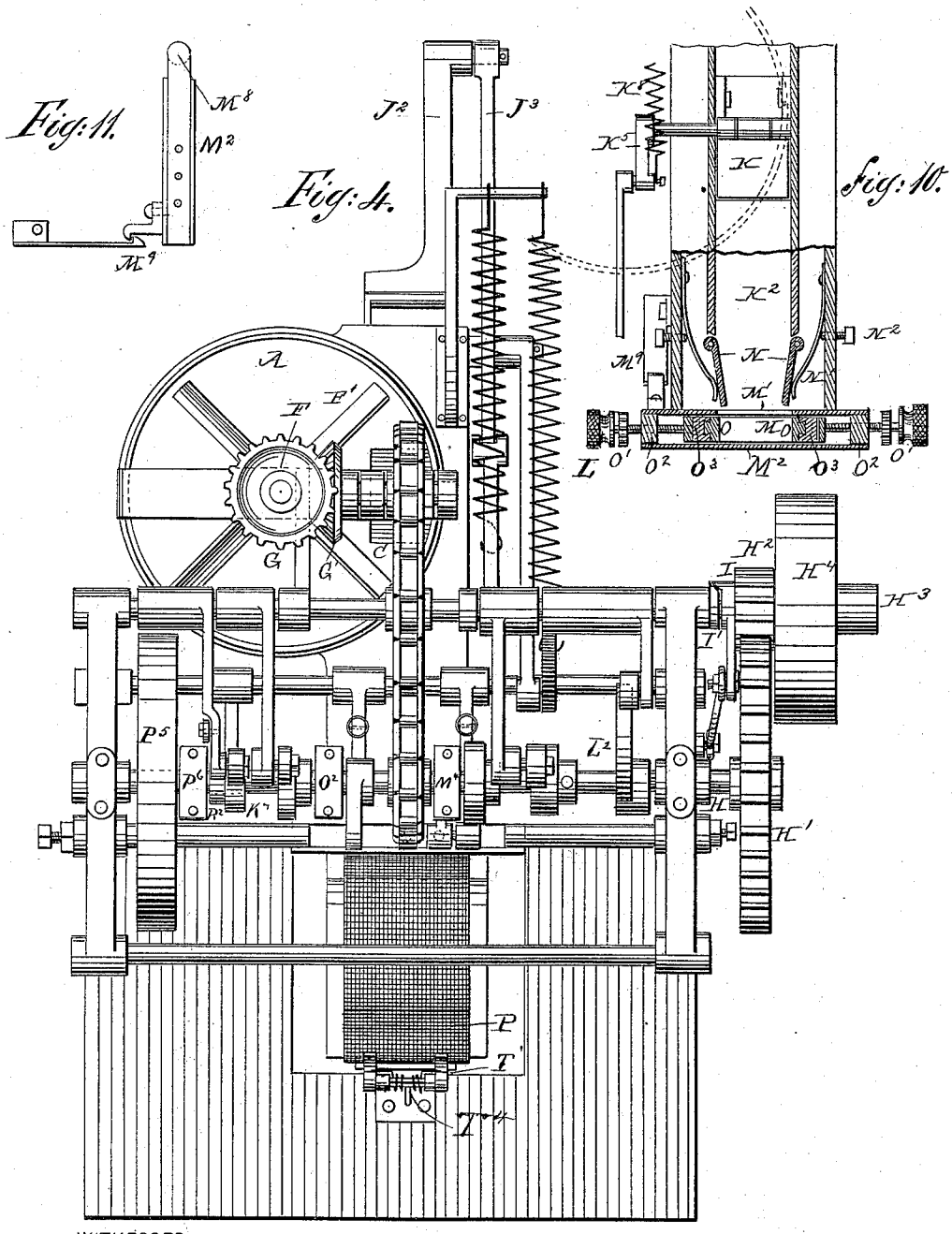
CIGAR BUNCHING MACHINE.

No. 535,697 Patented Mar. 12, 1895.



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(No Model.) 6 Sheets—Sheet 5.

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CIGAR BUNCHING MACHINE.

No. 535,697. Patented Mar. 12, 1895.

Fig. 12.

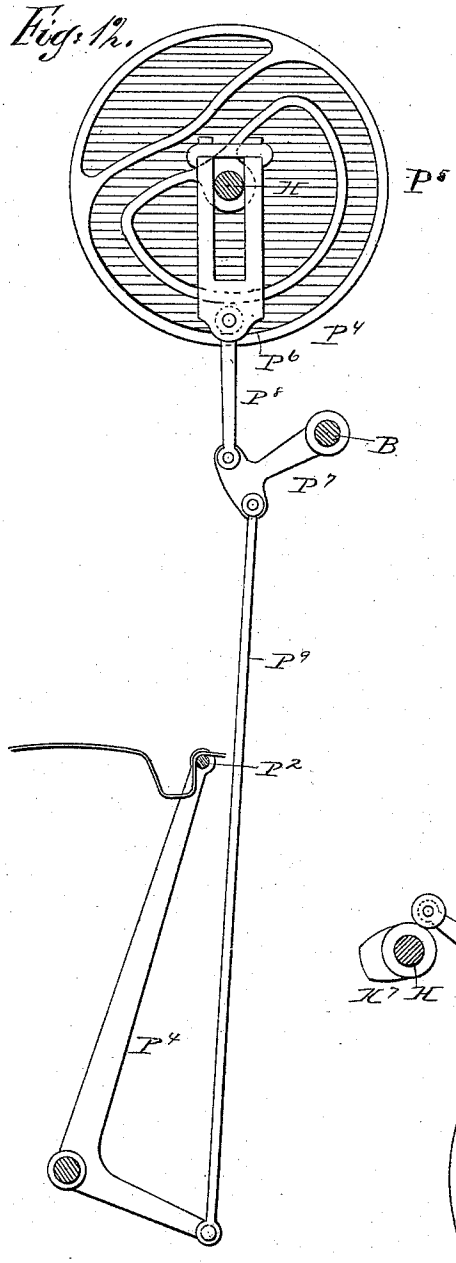


Fig. 15.

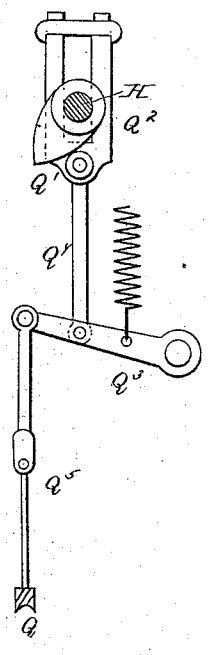
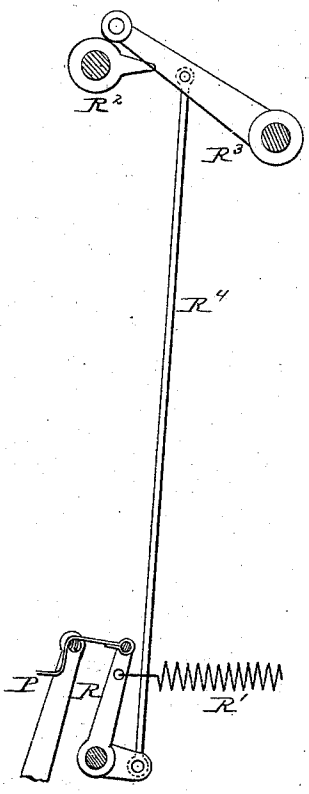


Fig. 13.



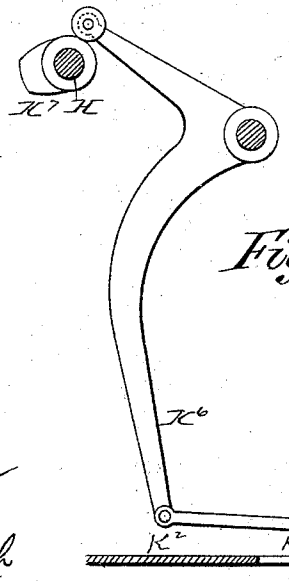
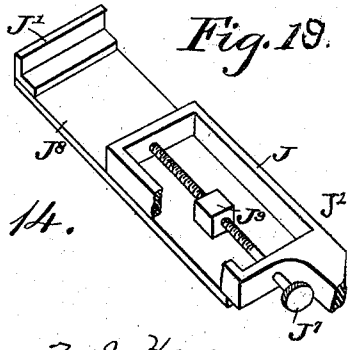


Fig. 14.

Fig. 19.



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(No Model.) 6 Sheets—Sheet 6.

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CIGAR BUNCHING MACHINE.

No. 535,697. Patented Mar. 12, 1895.

Fig. 16.

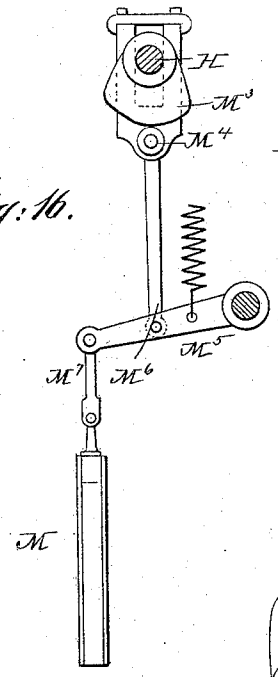


Fig. 17.

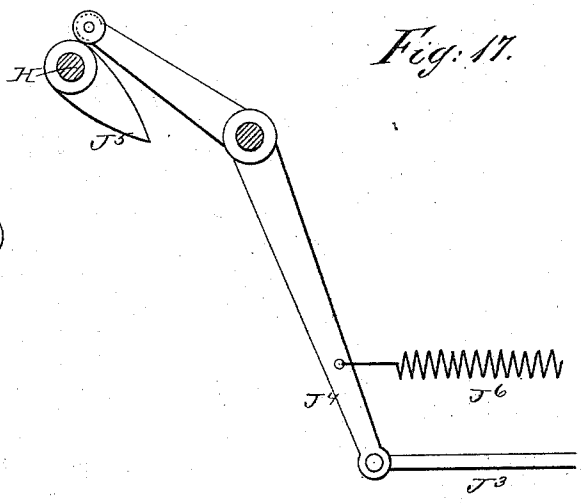
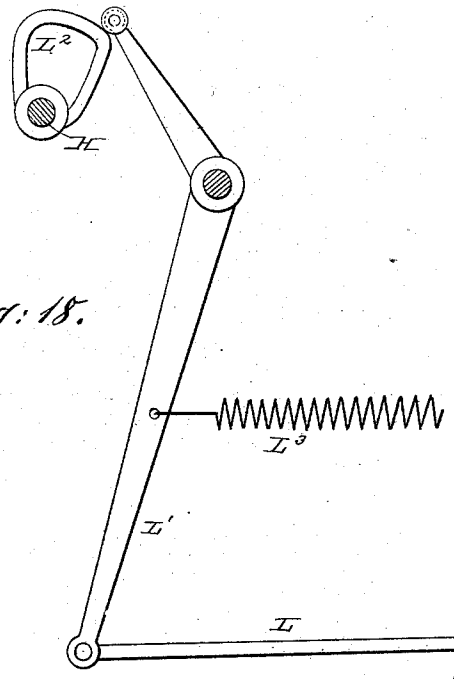


Fig. 18.



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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 MACHINE COMPANY, OF SAME PLACE.

CIGAR-BUNCHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 535,697, dated March 12, 1895.

Application filed November 10, 1891. Serial No. 411,426. (No model.)

To all whom it may concern:

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

This invention relates primarily to cigar-bunching machines in which the loose filler is fed intermittently from a hopper to a molding device to form fillers generally tapering at the ends and approximating the intended shape of the cigar, and the molded fillers thence transferred to the rolling and binding mechanism.

Among the objects of our present invention are to provide simple and efficient means for measuring off the proper portion of tobacco for each filler at each operation of the machine and delivering it to the molding device in form of a loose filler; for properly reducing the quantity of tobacco in the ends of and distributing the tobacco in such loose filler previous to its entering the molding device so that when molded the filler though tapered will be of uniform texture throughout; for varying the size and shape of the filler at will; for directly transferring the molded filler from the molding device to the rolling and binding mechanism, and for finally rolling and binding the filler in a better manner than heretofore.

The invention will first be described in detail in connection with the drawings and its various features then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a front elevation, partly in section, of a cigar-bunching machine embodying our invention. Fig. 2 is a side elevation of the same. Fig. 3 is a sectional side elevation on the line 3 3, Fig. 1. Fig. 4 is a plan view. Fig. 5 is a detail view illustrating the action of the rolling and binding mechanism. Figs. 6, 7, 8 and 9 are detail views of parts hereinafter referred to. Fig. 10 is a sectional plan view on the line 10—10, Fig. 3. Fig. 11 is a detail side elevation of the molding-chute guide and its locking device. Figs. 12, 13, 14, 15, 17 and 18 are detail sectional views on lines 12—12, 13—13, 14—14, 15—15, 17—17 and 18—18, respectively in Fig. 1. Fig. 16 is a detail side elevation of the molding-chute operating mechanism. Fig. 19 is a detail.

Like letters of reference designate corresponding parts in the various figures.

In the form of our invention thus represented, a cylindrical flat-bottomed hopper A, to contain the supply of loose filler, which may be scrap tobacco, is fixed upon an appropriate frame-work B and is provided with a discharge opening C through its bottom on one side by which the loose filler may pass into a measuring chamber E, arranged by preference directly beneath the hopper. Centrally within the hopper A is mounted an upright conical shaft F from which project radially a series of transversely inclined wings F′ by the revolution of which the filler in the hopper is constantly lifted, loosened and agitated to prevent the discharge opening C from clogging, and insure the passage of a constant quantity of tobacco therethrough. The agitator thus formed by the shaft and wings is here caused to revolve constantly during the operation of the machine by bevel gears G G′ connecting its upper end with a short shaft G^2 which is in turn connected by sprocket-wheels G^3 and G^4 and chain G^5 with a rotatable shaft H which extends transversely across the top of the framework B. The shaft H is arranged to be driven to operate the entire machine by a large spur wheel H′ which it carries and which engages a small spur wheel H^2 loose on a driving shaft H^3 carrying a driving wheel H^4 with which it is engaged at will by a clutch I I′, shown in detail in Figs. 7, 8 and 9, operated by a treadle I^2 and connecting rod I^3.

The opening C through the bottom of the hopper A is cut off intermittently by a horizontal gate here formed of the flat top J^8 of a plunger J which plunger is fitted to slide in the measuring chamber E horizontally across the under side of the hopper A. The plunger J when retracted, uncovers the opening C and

its head J′ forms the inner wall of the measuring chamber E and by its position determines the capacity of said chamber. As said chamber is then immediately filled by the descending tobacco, the plunger J is quickly carried forward so as to simultaneously cut off the opening C and drive the measured portion of tobacco in the chamber E forward out of the end thereof, and is then immediately retracted again for the next stroke.

To impart the described motion to the cut-off plunger J, the rearwardly projecting part J^2 thereof is connected by a link J^3, as best shown in Fig. 17, with a lever J^4 which is here operated by an outside cam J^5 fixed on the driven shaft H and returned by a spring J^6, although it may as well be given both movements by a grooved or double cam.

The head J′ of the plunger J is fixed to the front edge of the top J^8 of the plunger J, but said top J^8 is fitted to slide adjustably lengthwise on the sides of said plunger (which are shown in Fig. 4 projecting from the rear end of the measuring chamber or horizontally arranged passage way E) and said sides are rigidly connected by cross pieces (shown in section in Fig. 3, and one in plan in Fig. 4) in which is mounted to turn without axial movement a longitudinal adjusting screw J^7, which screws in a nut J^9 fixed to the top J^8, so that by turning said screw J^7, the top J^8 with the head J′ can be adjusted longitudinally upon the sides of the plunger so as to initially uncover more or less of the opening C according as the portion of tobacco to be discharged into the passage way E for sizing the fillings is to be greater or smaller.

The measured portion of tobacco ejected from the chamber E by the measuring plunger J as before described, drops down an upright plate K, through an opening K′ in the upper wall of a horizontal charging chamber K^2 in which is fitted to slide a plunger K^3 which is previously retracted behind said plate K. The plate K is here formed by a vertically swinging door when in its vertical position, which door is hinged to and fitted closely within the chamber-opening K′, and, immediately after the descent of the said portion of tobacco, is swung downward so as to close said opening and make the interior of the chamber K^2 smooth and tight. The plunger K^3 is then immediately carried to the position shown in Fig. 3, forcing the portion of tobacco in the chamber K^2 forward out of the mouth K^4 thereof and is then returned for the next portion, during which movement the plate-door K is returned to its vertical position, uncovering the chamber-opening K′ so as to receive the succeeding portion. The plate-door K in this case receives its motion, as best shown in Fig. 14, from an attached arm K^5 which is linked to a lever K^6 operated by a cam K^7 on the driven shaft H, and returned by a spring K^8 or it may be a reverse cam. The plunger K^3 is here actuated by a link L connected therewith and, as shown in Fig. 18, to a lever L′ operated by a cam L^2 on the shaft H and a spring L^3, or a reverse cam.

The mouth K^4 of the horizontal charging chamber K^2 opens through and registers with an opening M′ in the rear wall of a vertical molding-chute M; and the parts of the opposite sides of the horizontal charging chamber K^2 adjacent to said molding chute M are formed, as best shown in Fig. 10, by side plates N hinged to swing inward and outward, and maintained normally in a mutually converging position by springs N′ bearing against their respective backs, so that as the portion of tobacco is carried therebetween by the following plunger K^3, the quantity of tobacco in the ends of the portion will be reduced to approximate the taper of the intended cigar, while the spring-pressed side plates N will yield to allow the passage therebetween of the plunger. Such reduction of the ends of the filler is due to the fact that as the side plates N converge before the plunger K^3 reaches them, they terminate the ends of the intervening portion of tobacco obliquely, which results in a reduction of said ends when the plates N are separated and the ends of the portion elongated.

Adjusting screws N^2 are provided in the sides of the chamber K^2 to bear against the springs N^3 for regulating the normal inclination of the side plates N, so that the quantity of tobacco at the ends of each portion may be reduced to any desired extent. The reduced-end portion of tobacco will then be forced through the opening M′ into the molding-chute M, the width of which determines the length of the bunch. This width is here arranged to be varied at will, as best shown in Fig. 10, by loose inner molding-chute side walls O which may be adjusted laterally toward and from each other by sets of geared adjusting screws O′, swiveled to guide rails O^3 on which said loose walls O are mounted to slide by a dovetail joint and working through the side members O^2 of guide M^2.

The molding chute M together with its loose side walls O is arranged to reciprocate vertically in the guide M^3, and in the position described for receiving the portion of tobacco from the horizontal charging chamber K^2. The lower open end of the molding chute is depressed into a bight of a rolling apron P, on which a binder is to be previously placed, with its end beneath the molding chute. In the said molding chute is fitted to slide vertically the mold-section Q, which is here tapered at the ends to approximate the shape of the intended filler, and is raised just above the opening M′ when the portion of tobacco is forced therethrough as before described. The mold-section Q then immediately descends in the molding-chute, molding, evenly packing and depressing the filler into the bight of the rolling apron, after which the molding chute M and the mold-section Q are immediately raised again for the next stroke, leaving the molded filler in the bight

of the rolling apron. The mechanism we here employ for thus actuating the molding-chute is shown in detail in Fig. 16, and comprises a cam M^3 and vertically actuated cross-head M^4 guided on the driven shaft H and a spring returned, or it may be cam-returned, rocking lever M^5 mounted on the framework B and connected with the cam-actuated cross-head M^4 by a rod M^6 and with the vertically sliding molding-chute M by a link M^7.

The mold-section Q itself we operate, as shown in detail in Fig. 15, by a cam Q′ and cam-actuated vertically sliding cross-head Q^2 on the driven shaft H, a spring- or it may be cam-returned rocking lever Q^3 mounted on the framework B and connecting rods or links Q^4 Q^5.

In order to give access to the mold-section Q and interior of the molding-chute M and horizontal charging chamber K^2 for replacing the mold-section by another of different character, or for inspection, repairs or renewal, we hang the molding-chute guide M^2 by pivoted arms M^8, as best shown in Fig. 11, from the framework B, and lock the said guide, molding chute and mold-section to the horizontal charging chamber K^2 by a spring-catch M^9, as clearly shown in Figs. 10 and 11, so that on releasing said catch M^9, the guide M^2, molding-chute M and mold-section Q can be swung forward on their respective hangers away from the mouth of the horizontal charging chamber K^2, as indicated in dotted lines in Fig. 3.

The under side of the rolling apron P, the forward part of which rests on a longitudinally arched rolling table P′, is traversed by a bunching roller P^2 which is fixed between the branches of the bifurcated upwardly projecting arm P^3 of a carrying lever P^4 pivoted at the center of the arch of the rolling table. The bunching roller P^2 supports the rear of the bight of the apron P close behind the molding-chute M when the same is depressed and the molded filler is forced by the plunging mold-section Q into the bight as before stated, and as soon as the molding chute and mold-section ascend again, the bunching roller P^2 is moved forward carrying the apron over the deposited filler and rolling the same into the underlaid binder.

The roller-actuating mechanism we here employ is shown in detail in Fig. 12, and comprises a grooved cam P^4 and cam-actuated vertically sliding cross-head P^6 on the driven shaft H, a rocking lever P^7 mounted on the framework B, and rods P^8 P^9 connecting the rocking lever P^7 with the said cross-head and with another arm of the roller-carrying lever P^4.

The rear end of the rolling apron P is attached to the upper end of a lever R which is swung forward, as shown in Fig. 5, when the bunching roller P^2 is carried forward over the filler, to given the apron the necessary extra slack, and is returned, as by a spring R′, to take up the extra slack when the filler has been rolled and bound. The mechanism we have devised for thus actuating the apron-regulating lever R is shown in detail in Fig. 13 and comprises a cam R^2 on the driven shaft, a cam-actuated lever R^3, and a rod R^4 connecting the lever R^3 with an arm of the apron regulating lever R.

The bunching roller P^2 is fixed at both ends, as best shown in Fig. 6, eccentrically to journals S mounted to turn in circular bearings S′ formed on the branches of the arm P^3 of the carrying-lever, so that by turning said journals S, the roller can be accurately adjusted to and from the rolling table to secure a proper rolling and binding of the filler. The forward end of the apron P is carried downward around that end of the rolling table and attached to tension-adjusting screws T. The filler as it is rolled, bound and carried forward by the bunching roller P^2 is taken up by a hinged receiver T′, which is swung forward by the roller with the filler and delivers it upon the table T^3, and is then returned empty by a spring T^4. The bunches thus made and delivered are of uniform density throughout, and of uniform size and shape, even though scrap tobacco is used.

We claim as our invention—

1. In a cigar bunching machine the combination with a supply hopper having a bottom outlet, of a horizontally arranged passage way extending below said outlet and communicating therewith, a plunger in said passage way having a longitudinally movable cut-off top carrying the driving head of said plunger, means for adjusting said top lengthwise on the plunger, actuating mechanism attached to said plunger for ejecting the charge from the passage way, filler-binding mechanism, and means for conveying thereto the successive portions of tobacco ejected from the passage way, substantially as described.

2. In a cigar bunching machine, the combination with a hopper having an outlet, of a plunger J, having sides and cross pieces, a head J′, a cut-off top J^8 carrying said head, and movable lengthwise on said sides, a nut J^9 attached to said top, and an adjusting screw J^7 journaled in said cross pieces, and engaging with the nut J^9, substantially as described.

3. In a cigar bunching machine, the combination with a supply hopper and mechanism for measuring off and ejecting in succession equal portions of the supply of tobacco issuing from said hopper, of a charging chamber K^2 having an opening into which the ejected portions of tobacco go, a door for closing said opening, means for opening and closing said door synchronously with the measuring and ejecting mechanism, a plunger working in the charging chamber K^2, filler molding mechanism communicating with said charging chamber, and mechanism for binding the fillings, substantially as described.

4. In a cigar bunching machine, the combination with a supply hopper, of a horizontally arranged passage way opening therefrom,

means for intermittingly cutting off the horizontally arranged passage way from the hopper and successively ejecting the measured portions of tobacco, a charging chamber K^2 having an opening to receive the ejected portion of tobacco, an intermittingly closing door, for said opening, which door when open extends as a guide to the horizontally arranged passage way, a plunger reciprocating in the charging chamber K^2, means for reciprocating said plunger, and bunch forming mechanism to which said charging chamber leads, substantially as described.

5. In a cigar bunching machine, the combination with a supply hopper, a horizontal charging chamber K^2, mechanism for delivering the tobacco intermittingly from said hopper into the chamber K^2, and for advancing it intermittingly in the chamber K^2, and rolling mechanism below the mouth of the chamber K^2, of a vetically movable molding chute to receive the tobacco from the passage way K^2, means for reciprocating said molding chamber and causing its lower end to engage the apron of the rolling mechanism, and a mold section reciprocating in said molding chute, to form and depress the filler into the rolling apron, substantially as described.

6. In a cigar bunching machine the combination with a supply hopper, a horizontal charging chamber K^2, mechanism for delivering the tobacco intermittingly from said hopper into the chamber K^2 and for advancing it intermittingly therein, and bunch rolling mechanism having an apron below the mouth of the chamber K^2, of a fixed vertical guide, a molding chute reciprocating vertically in said guide and having an opening connecting with the chamber K^2, means for reciprocating said molding chute and causing its lower end to engage the rolling apron a mold-section sliding vertically in said molding-chute, and means for reciprocating the mold-section independently of the molding chute, substantially as described.

7. In a cigar bunching machine, the combination with a horizontal charging chamber K^2, mechanism for intermittingly supplying tobacco to and advancing it in the chamber K^2, and bunch rolling mechanism, of a vertical molding chute, into which the chute K^2 opens and which leads into the pocket of the bunch rolling mechanism, a vertical guide for the molding chute, a mold section mounted to slide in said molding chute, mechanism for reciprocating the molding chute and the mold section therein independently, pivotal connections between the molding chute and mold section and their actuating mechanism, and means for disengaging their guide, so that they may be swung outward, substantially as described.

8. In a cigar bunching machine, the combination with a filler molding mechanism including a molding chute, of a horizontal charging chamber K^2 opening into the molding chute, a plunger working in the chamber K^2, and yielding inwardly-inclined side walls at the mouth of the chamber K^2 to reduce the fed portion of tobacco at the ends, substantially as described.

9. In a cigar bunching machine, the combination with the filler molding mechanism including a molding chute, a horizontal charging chamber K^2 opening thereinto, and spring pressed inclined side walls at the mouth of the chamber K^2, of means for adjusting the said spring pressed side walls inward or outward at will, and means for forcing the filler through said chamber, substantially as described.

10. In a cigar binding machine, the combination with a guide M^2 comprising a laterally adjustable rail O^3, of a molding chute reciprocating in said guide and having a wall O, adjustable with said rail transverse to the line of movement of said chute, and means for reciprocating said chute, substantially as described.

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