

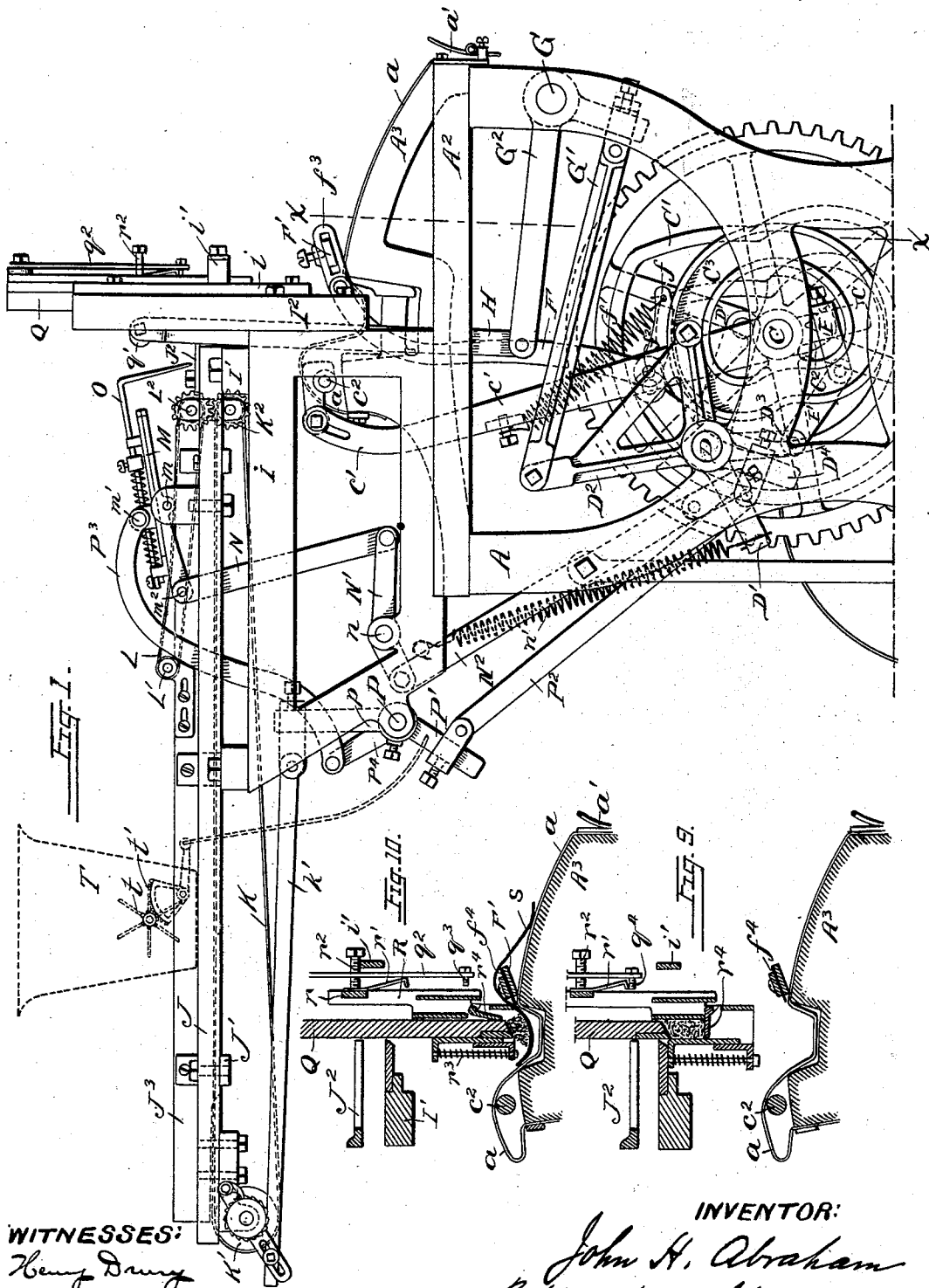
(No Model.)

5 Sheets—Sheet 1.

J. H. ABRAHAM.
CIGAR BUNCHING MACHINE.

No. 506,615.

Patented Oct. 10, 1893.



WITNESSES:

Henry Dwyer

Edw. Kelly
Caleb J. Becker

INVENTOR:

John H. Abraham
By his atty. J. H. Abraham

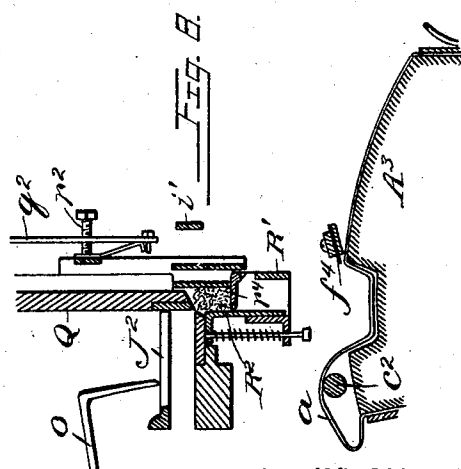
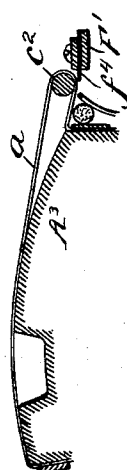
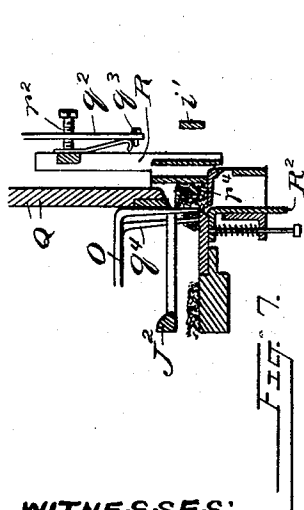
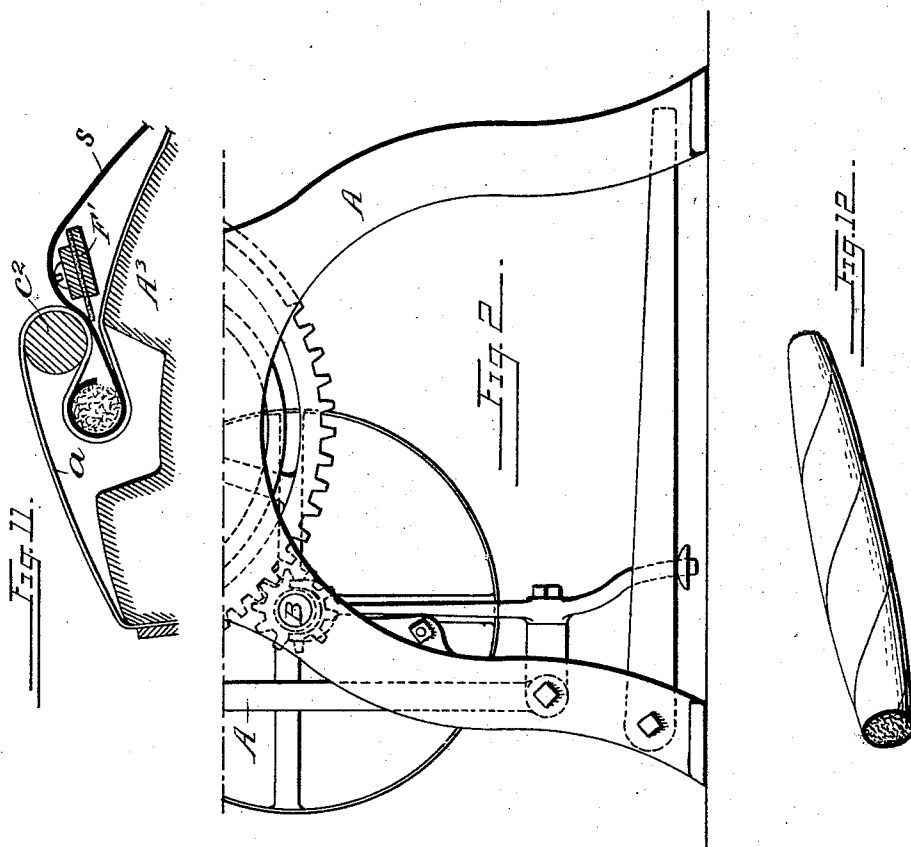
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WITNESSES:

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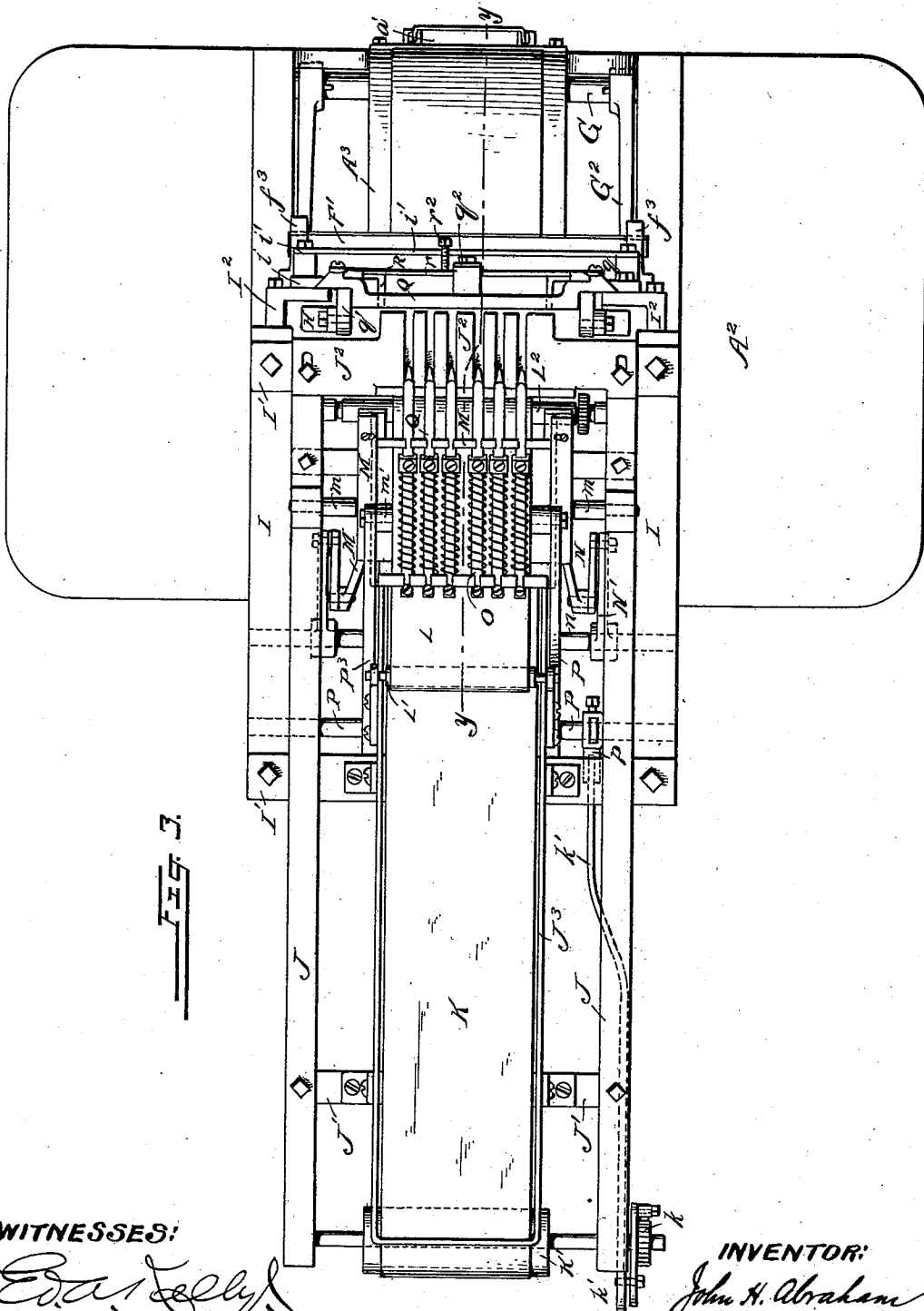
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Patented Oct. 10, 1893.



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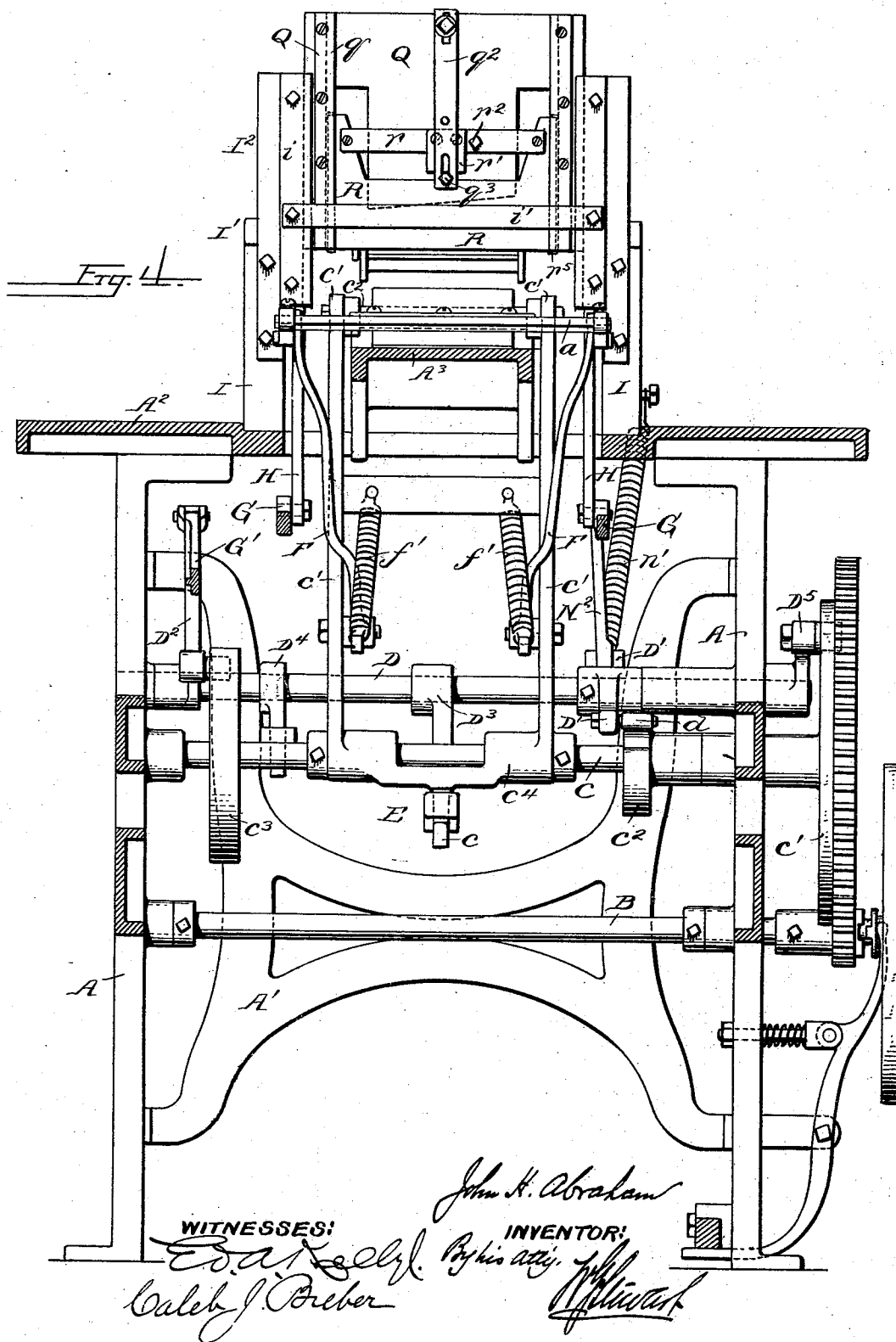
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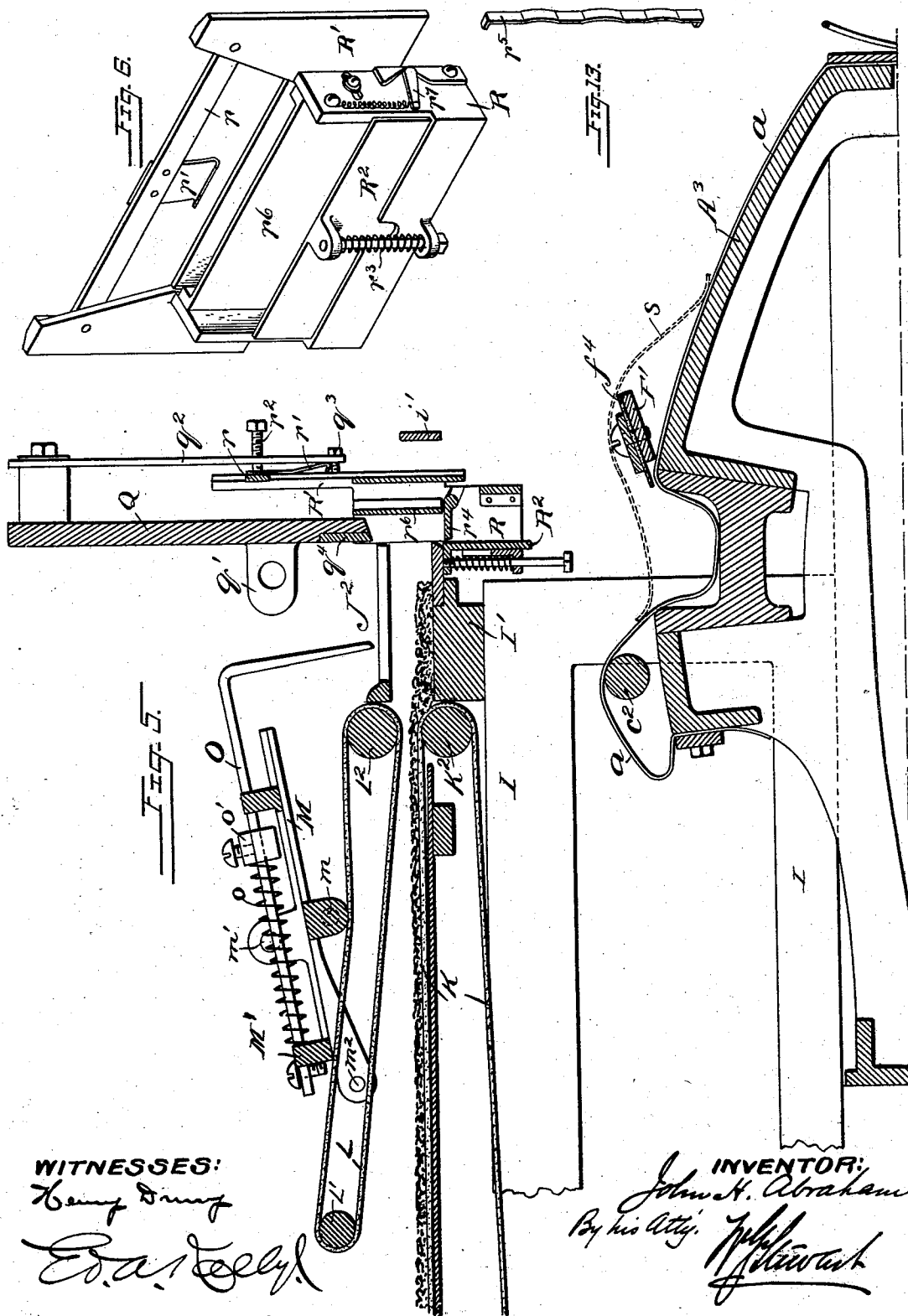
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5 Sheets—Sheet 5.

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Patented Oct. 10, 1893.



WITNESSES:

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INVENTOR:

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UNITED STATES PATENT OFFICE.

JOHN H. ABRAHAM, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO THE
EMPIRE STATE CIGAR MACHINE COMPANY, OF SAME PLACE.

CIGAR-BUNCHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 506,615, dated October 10, 1893.

Application filed April 19, 1893. Serial No. 470,928. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. ABRAHAM, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia, State of Pennsylvania, have invented certain Improvements in Cigar-Bunching Machines, of which the following is a specification.

This invention relates to machines for automatically forming filler tobacco into cigar bunches; and it consists particularly in improved mechanism for feeding the tobacco to the bunching mechanism and for delivering it from said apparatus to the bunch rolling mechanism; and also in other special features of construction and novel combinations of mechanism which are fully described in connection with the accompanying drawings and specifically pointed out in the claims.

Figures 1 and 2 are together a complete side elevation of a cigar bunching machine embodying the invention. Fig. 3 is a plan view of the same. Fig. 4 is a front elevation, partly in section on the line $x x$ of Fig. 1. Fig. 5 is an enlarged sectional view on the line $y y$ of Fig. 3. Fig. 6 is a perspective view of the carrier box. Figs. 7, 8, 9, 10, and 11 are sectional diagram views illustrating different stages of the bunching operation. Fig. 12 indicates a shape of cigar bunch formed in my mechanism, and Fig. 13 is a detail view.

A^2 represents the bed of the machine which rests upon side supports $A A'$ in which are mounted the shafts B, C , and D from which movements are transmitted to the several mechanisms located above the bed plate, for feeding the tobacco onward, separating it into bunches, and rolling the same into the binders.

The shaft B is provided with a loosely mounted belt wheel, a clutch mechanism for throwing it into and out of gear, and a pinion which gives continuous rotation to the shaft C . The latter in turn, through the cam C' and crank D^5 gives an irregular rocking motion to the shaft D and the parts attached thereto. The connections required between the operating parts of the machine and these motor shafts will be referred to in describing the former and their manner of co-operat-

ing in the automatic formation of the cigar bunches.

The endless feed belt K passes over rollers $K' K^2$, the latter of which is mounted near the forward end of the frame I secured to the bed A^2 , while the roller K' is carried by the rearward extension J of said frame. Above the upper surface of this belt is a fixed frame J^3 which forms in connection with the belt a feeding trough, the width of which corresponds with the length of a cigar. The tobacco being placed in this trough is carried forward by the belt which serves as a moving bottom to the trough. Intermittent motion is given to this belt through the rod k' which has a ratchet and pawl connection with the roller K' , and is connected at its forward end with an arm p on a transverse shaft P to which a rocking motion is given through the arms P' , rod P^2 and arm D^4 on the shaft D . A supplemental feed belt L mounted above the forward portion of the main feed belt on rollers L', L^2 is geared with said main belt so that the adjacent surfaces of the two belts between which the tobacco is carried co-operate in moving it forward to the fixed receiving table I' .

The hopper T which is indicated in dotted lines in Fig. 1 is conveniently used when "shorts" are employed as a filler, the bottom of the hopper being a rotary vane wheel to which an intermittent agitating motion corresponding with that given to the feed belt is transmitted from the shaft P , thus insuring a steady flow of the filler tobacco to the belt at each movement.

The stream of tobacco delivered to the receiving table I' by the feed belt is thereafter divided by the feeding fingers Q , which separate a portion of the tobacco and push it ahead into the carrier box R and under the plunger Q . These fingers are adjustably secured in a sliding frame M' as shown in Figs. 1, 3, and 5, each finger being backed in said frame by independent springs o , the tension of each of which is readily regulated by a sliding collar o' so as to vary the amount of tobacco pressed into the carrier at different points. The sliding frame M' is mounted upon a rocking frame M supported on trun-

nions *m*. The fingers *O* are caused to descend through the slotted plate *J*² which covers the receiving table *I*¹, into the stream of tobacco, by the motion given to the rod *N* (connected to it at *m*²) through the rocking arm *N'* on shaft *n* from the arm *D'* *D'* on the shaft *D*, which latter is operated by the arm *c*² on the shaft *C*. The forward motion of the sliding frame *M'* which immediately succeeds the descent of the fingers, is given by the rod *P*³ connecting it with the arm *P*⁴ fixed to the same shaft *P* from which the feed belt motion is conveyed.

The forward movement of the fingers *O* pushes the portion of tobacco separated from the stream delivered by the belt, into the carrier box *R* as indicated in Fig. 7. This box is most clearly shown in detail in Fig. 6 and in its relation to the plunger *Q* upon which it is mounted in Figs. 3, 4, and 5. The main portion of the box *R* is provided with guides *R'* which slide in ways formed on the plunger, spring friction gibs *r*⁵ (Figs. 4 and 13) being preferably employed. The bottom or trap-door *r*⁴ of the box is located midway of its depth and is hinged as indicated and held closed by a spring *r*⁷. The forward wall *r*⁶ is made adjustable so as to vary the capacity of the box to suit cigars of different sizes. The rear wall *R*² is a separate piece arranged to slide up and down. It is normally held up by a spring *r*³ but in the raised position of the box indicated in Figs. 5 and 7 is depressed by contact with the under side of the receiving table *I*¹ so as to permit the entrance of the tobacco pushed into the box by the fingers *O*.

The plunger *Q* is arranged to slide vertically in frame guides *I*² and its presser blade *q*⁴ descends immediately in front of the receiving table *I*¹, so as to cut off the portion of tobacco pushed into the box by the spring fingers *O* from any surplus remaining on the table. This presser blade passes down through the carrier box *R* pushing open the trap-door *r*⁴ to deliver the filler tobacco onto the binder *s*. The manner in which this is accomplished is as follows:—The plunger *Q* in descending carries with it the carrier box *R* as indicated in Fig. 8, the rear sliding wall *R*² of the box remaining immovably held up by the spring *r*³ as the main portion of the box descends so as to confine the descending filler tobacco at all sides. Plunger and carrier continue to descend together as shown in Fig. 9 until the stop *r*² projecting from the carrier box comes in contact with the fixed cross-bar *i*¹ when its further movement is prevented and the continued descent of the plunger causes the presser blade to force open the trap-door *r*⁴ and to deliver the tobacco upon the binder *s* which has meanwhile been placed in position upon the rolling apron *a* on the rolling table *A*³. The plunger and the carrier box then ascend to their normal positions, the carrier being positively raised by the pin *q*³ on the plunger arm *q*² which comes in contact with

the clip *r*¹ on the carrier while the forward wall *R*² is stopped by contact with the bottom of the receiving table.

The motion of the plunger and the carrier box which is mounted upon it, is derived through the arm *H* which connects to the lugs *q*¹ from the bell crank *D*² loosely mounted on the shaft *D* and operating through the connections *G*¹ and crank *G*² on the transverse shaft *G*, the bell crank *D*² being itself operated by the cam *C*³ fixed to the rotary shaft *C*.

The bunch rolling mechanism is in the main similar to that ordinarily employed, the loose apron *a* on the rolling table *A*³ being caused to wrap the binder *s* around the tobacco delivered upon it by the passage of a bunching roller *c*² operating in connection with a binder holder *F*¹. In my construction the roller *c*² is adjustably secured to a double lever *c*¹ having a hub *c*⁴ loosely mounted on the rotary shaft *C* and deriving its rocking motion from the shaft *D* through the fixed crank *D*³ and connecting bars *E* *E*¹; while the binder holder *F*¹ is adjustably secured to levers *F* which are pivoted to intermediate points *f*² of the double lever *c*¹. These levers *F* are bent sidewise in front of the double lever *c*¹ and are normally held against the latter by springs *f*¹ so as to be moved with it; the binder holder however is stopped in its rearward movement by the fixed frame *I*², while the bunching roller *c*² continues its movement farther back. In rolling the binder *s* around the filler the roller approaches the binder holder as indicated in Fig. 11 finally carrying it with it in completing the binding operation. The filler tobacco is placed upon the belt *K*, either directly by the operator in the case of long fillers, or through the hopper *T* if shorts are used. Each intermittent motion given to the belts *K* and *L* by the rod *k*¹ and connected mechanism, carries the tobacco forward until a proper amount of it is delivered onto the receiving table behind the plunger *Q*, which latter with the carrier box *R* has assumed the position indicated in Fig. 5. The fingers *O* are now caused to descend through the slotted plate *J*² by the tilting of the frame *M* through the lever mechanism *N*, *N'*, *N*² and *D*, and into the layer of tobacco; and the finger carriage is moved ahead by the arm *P*³ and connected levers so as to push the portion of tobacco in front of the fingers into the carrier box. Each of the fingers *O* being independently adjustable as shown, can be set so as to vary the pressure upon the tobacco in front of it and force into the box a sufficient amount to give the desired tapering form to the cigar bunch. The plunger *Q* is now carried down by the rods *H* and connected mechanism until the presser blade *q*⁴ severs the bunch from the surplus, and presses it into the box, which latter continues to descend with the plunger until the stop *r*² comes in contact with the cross-bar *i*¹ when the box is stopped and the continued downward movement of the plunger opens the

trap-door r^4 and pushes the bunch into the binders which has meanwhile been placed in position upon the apron and which is wrapped around it by the bunch rolling mechanism, the roller c^3 and binder holder F' co-operating as described.

Having thus described my invention in the preferred manner in which I have practically applied it, I do not desire to limit myself to the particular form of details and the exact arrangement described, but

What I claim is—

1. In a cigar bunching machine the combination with the feed belt and mechanism for imparting an intermittent motion thereto, of the hopper provided with a movable bottom t , and mechanism for operating said movable bottom at intervals corresponding with the intermittent motions of the belt, substantially as and for the purpose set forth.

2. In a cigar bunching machine the combination with the endless feed belt of the fixed receiving table provided with a slotted cover J^2 , and fingers O arranged to ride in said slotted cover, substantially as set forth.

3. In a cigar bunching machine the combination with the endless feed belt of the fixed receiving table provided with a slotted cover J^2 , and fingers O arranged to rise and fall through said slotted cover, said fingers having also a forward and backward motion, substantially as set forth.

4. In a cigar bunching machine a series of feeding fingers O mounted in a sliding frame, and capable of independent adjustment, substantially as set forth.

5. In a cigar bunching machine a series of feeding fingers O mounted in a sliding frame and capable of independent adjustment, said sliding frame having also an intermittent tilting motion to raise and lower said fingers, substantially as set forth.

6. In a cigar bunching machine the tilting frame M having mounted thereon a sliding frame provided with independently adjustable fingers O , in combination with mechanism for successively operating said frames, substantially as set forth.

7. In a cigar bunching machine the combination with plunger Q of the carrier box mounted thereon and provided with an adjustable forward wall r^6 substantially as and for the purpose set forth.

8. In a cigar bunching machine the combination with plunger Q of the carrier box mounted thereon and provided with a verti-

cally slidable rear wall with spring for normally raising the same, substantially as set forth.

9. In a cigar bunching machine the combination with plunger Q having guide ways and a projection q^3 on arm q^2 of the carrier box R mounted in said ways and provided with clip r' and stop r^2 and the fixed bar i' all adapted to operate substantially as set forth.

10. In a cigar bunching machine the combination with the intermittently operated feeding mechanism, of the plunger Q and carrier R operating at right angles thereto, said carrier being mounted in slide ways in the plunger and provided with a vertically slidable rear wall R^2 , a spring bottom r^4 adapted to permit the passage of the plunger blade and suitable stops for regulating the return movements of the plunger and carrier, all substantially as set forth.

11. In a cigar bunching machine the combination with the carrier and the binding table and apron, of the bunching roller c^2 and binder holder F' carried respectively by levers c' and F , said lever F being pivoted to the lever c' and normally held in contact therewith by a spring, substantially as described.

12. In a cigar bunching machine the combination with the endless feeding belt and feeding fingers of shafts P and N and levers thereon operatively connected to said feeding belt and fingers and to the main operating shaft, substantially as set forth.

13. In a cigar bunching machine the combination with the rotating motor shaft C , and the rocking shaft D operated thereby of the bunch rolling mechanism carried by levers c' F , loosely mounted upon said rotating shaft C and operated by a fixed arm D^3 on said rocking shaft, substantially as set forth.

14. In a cigar bunching machine the combination with the rotating motor shaft C , and the rocking shaft D operated thereby of the feeding fingers and the arm D' for rocking the same, mounted on said shaft C and operated by a cam C^2 on the rotary shaft, said arm D' being normally held in contact with said cam by a spring n' substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN H. ABRAHAM.

Witnesses:

W. G. STEWART,
CAMERON E. STRAUSS.