

(No Model.)

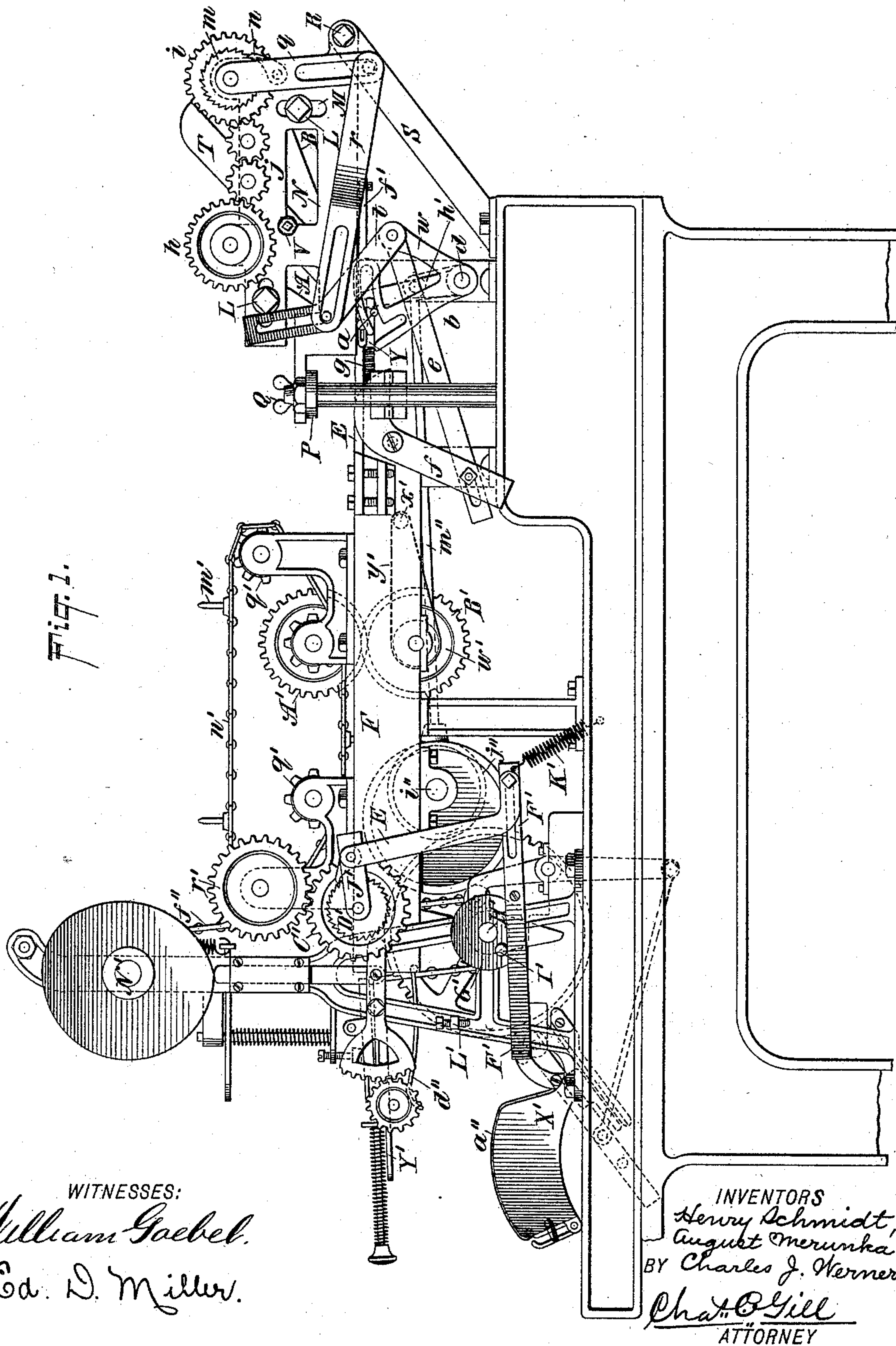
4 Sheets—Sheet 1.

H. SCHMIDT, A. MERUNKA & C. J. WERNER.

CIGAR BUNCHING MACHINE.

No. 492,438.

Patented Feb. 28, 1893.



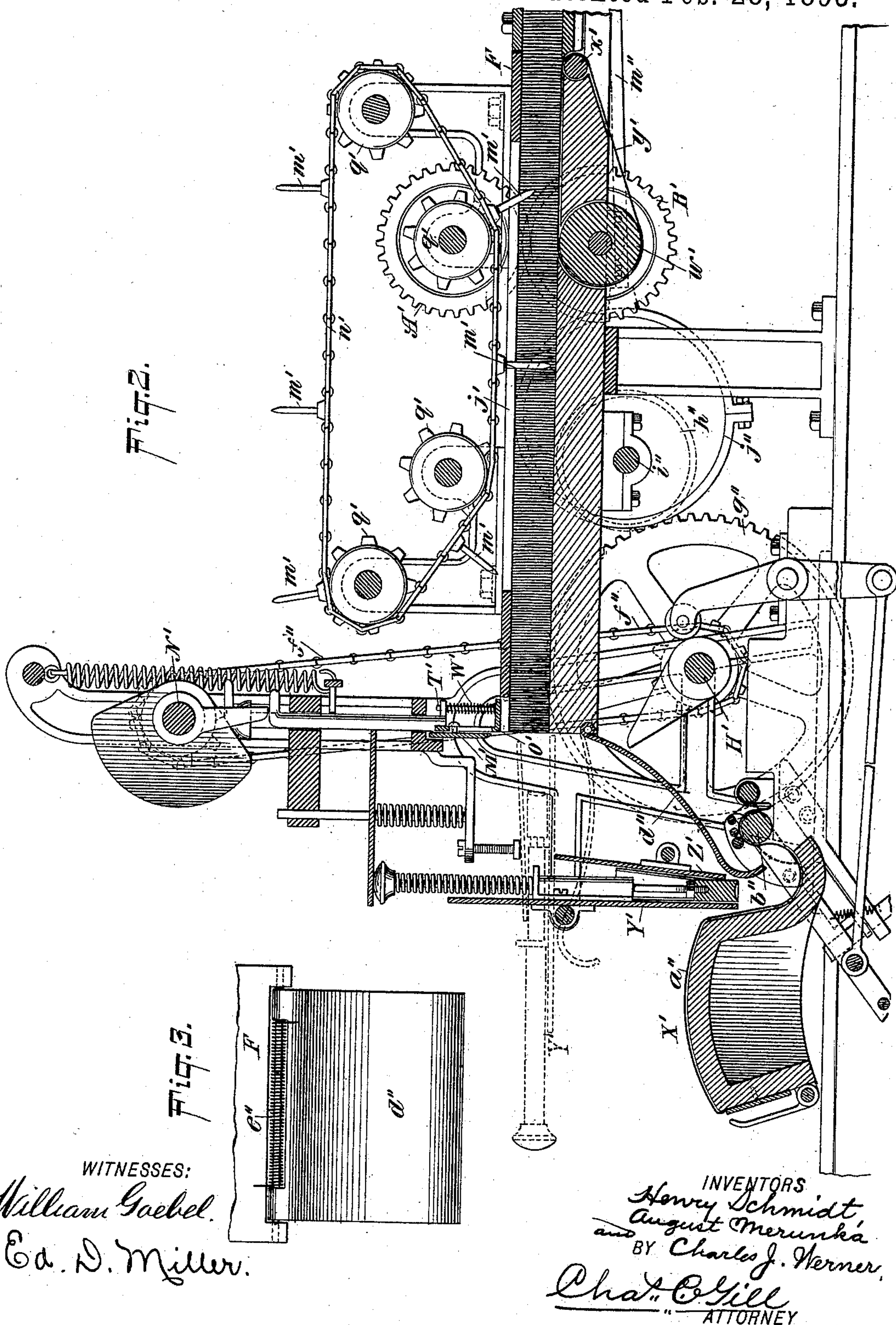
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4 Sheets—Sheet 2.

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4 Sheets—Sheet 3.

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Fig. 7.

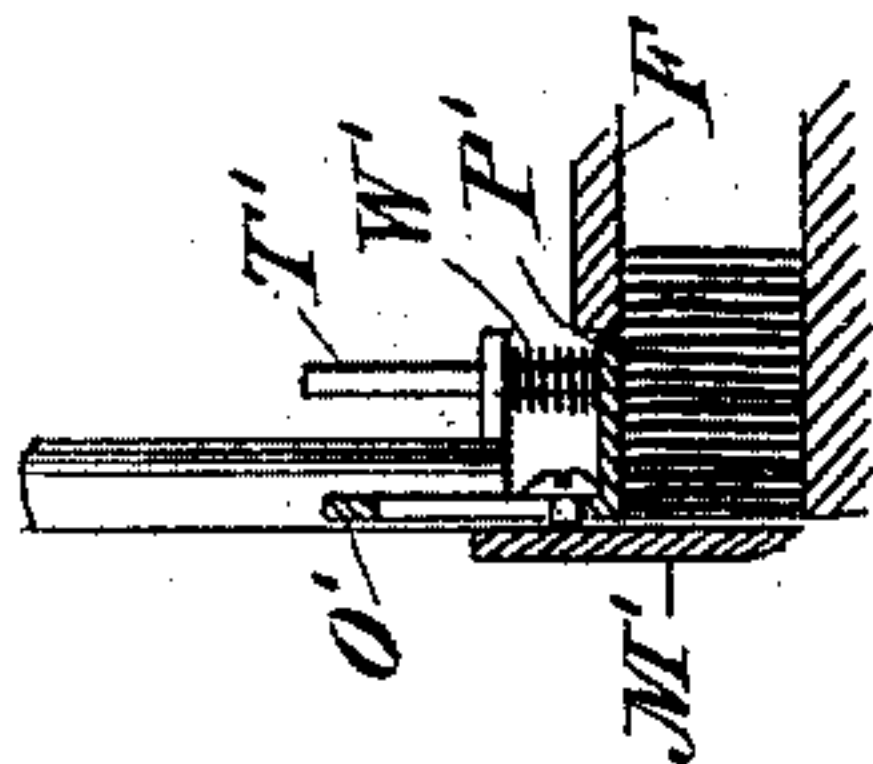


Fig. 5.

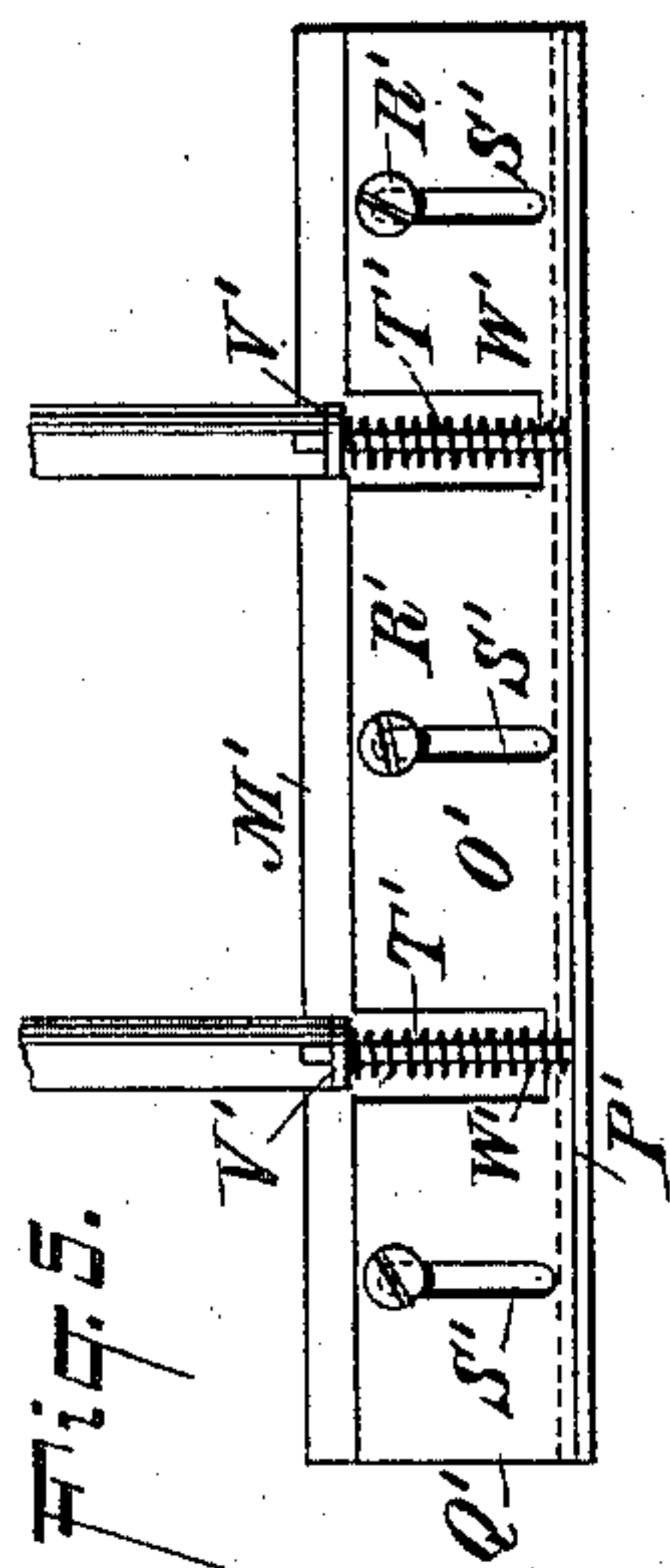


Fig. 6.

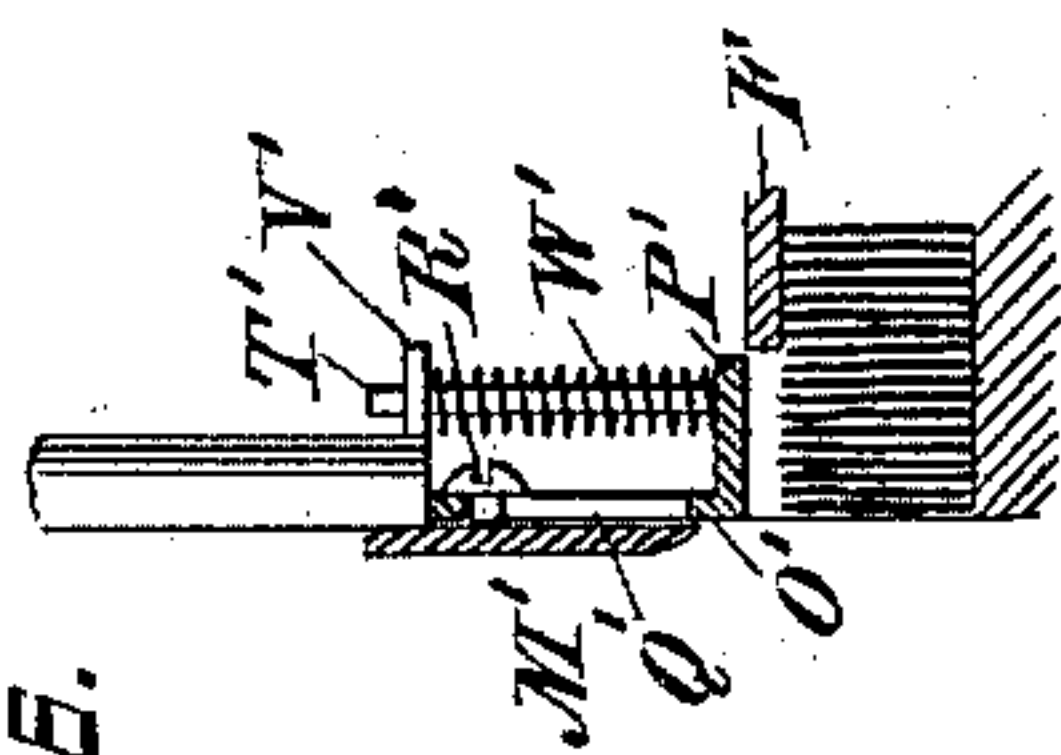
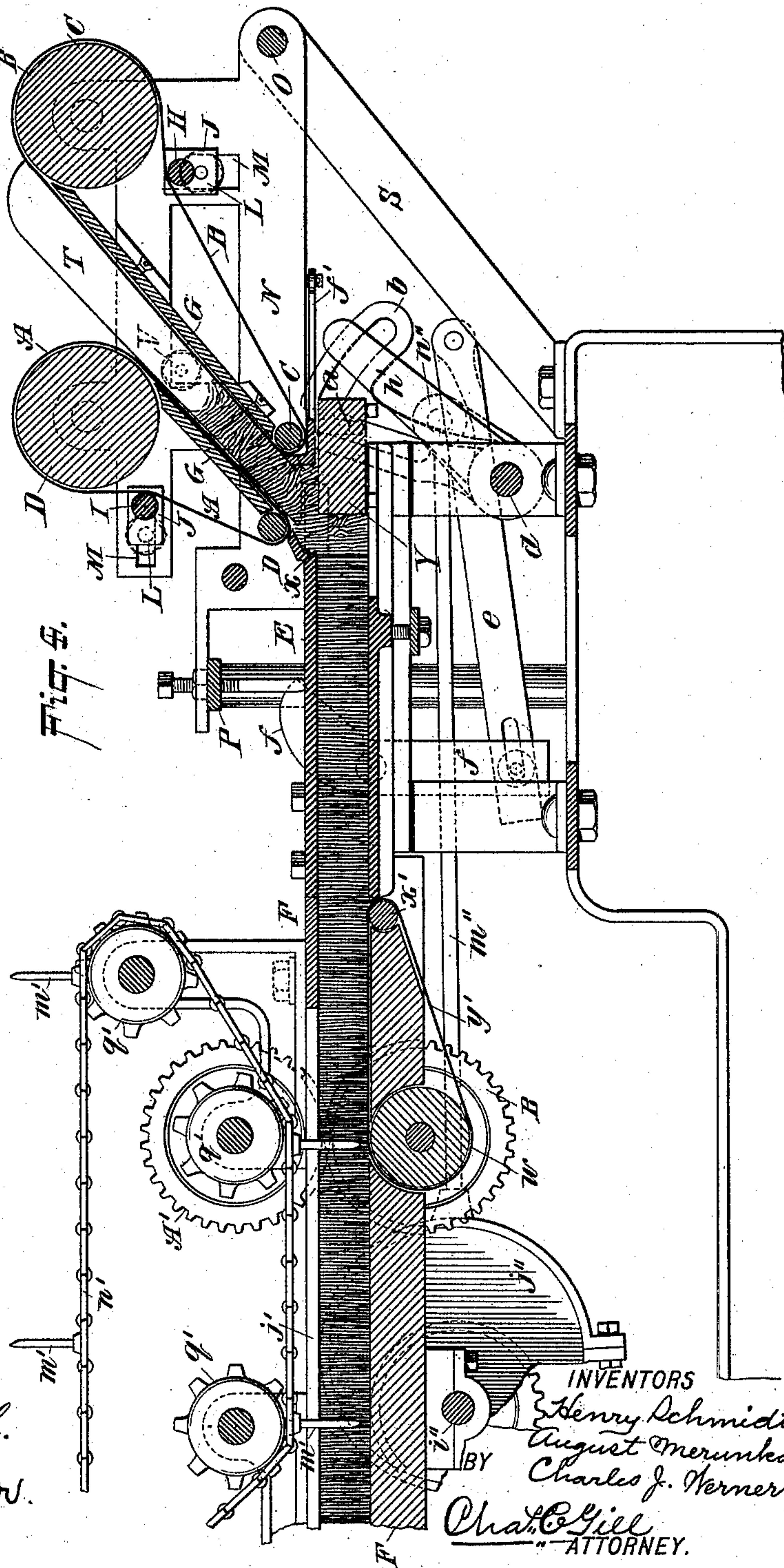


Fig. 4.



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(No Model.)

4 Sheets—Sheet 4.

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Fig. 8.

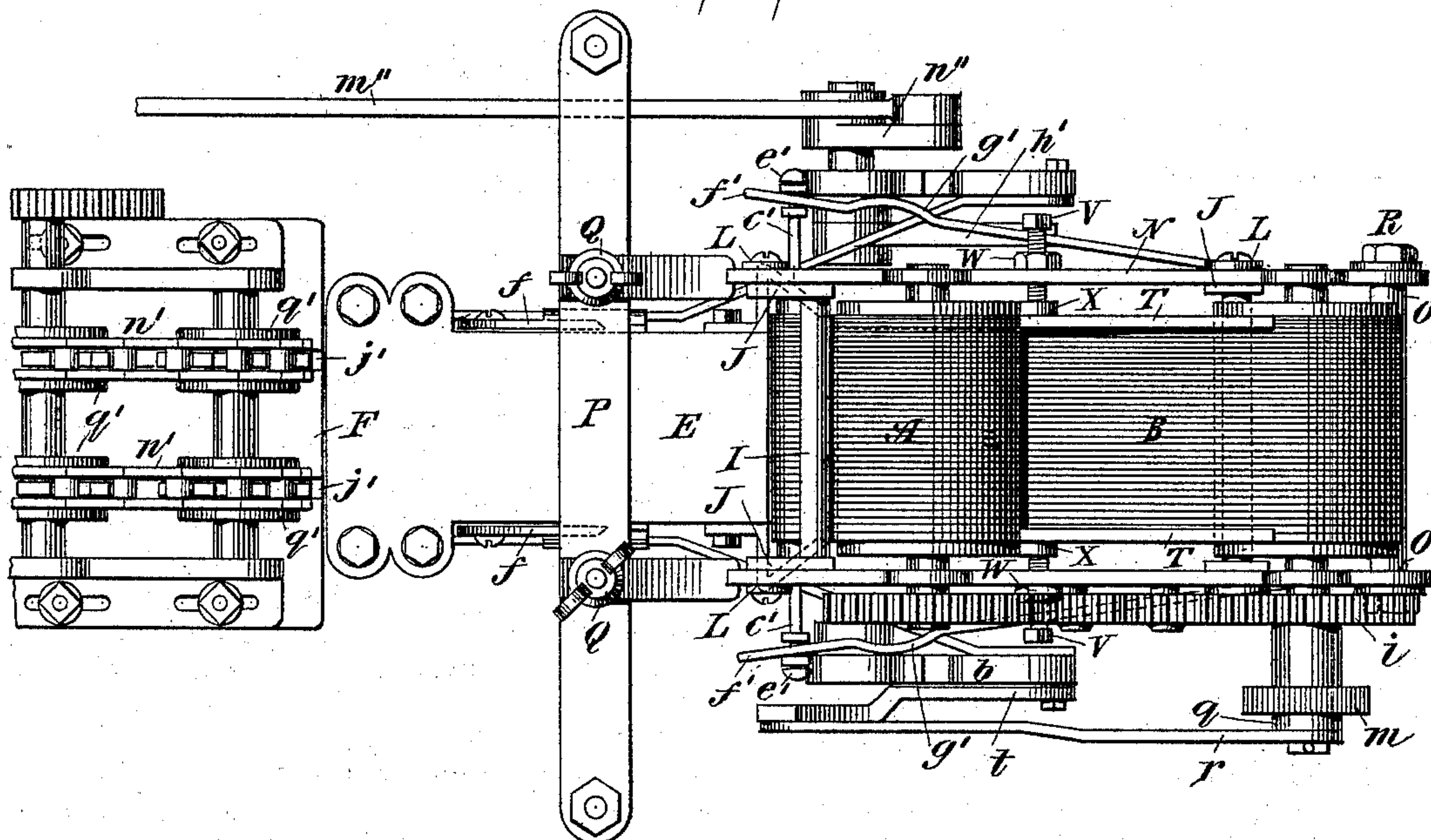


Fig. 9.

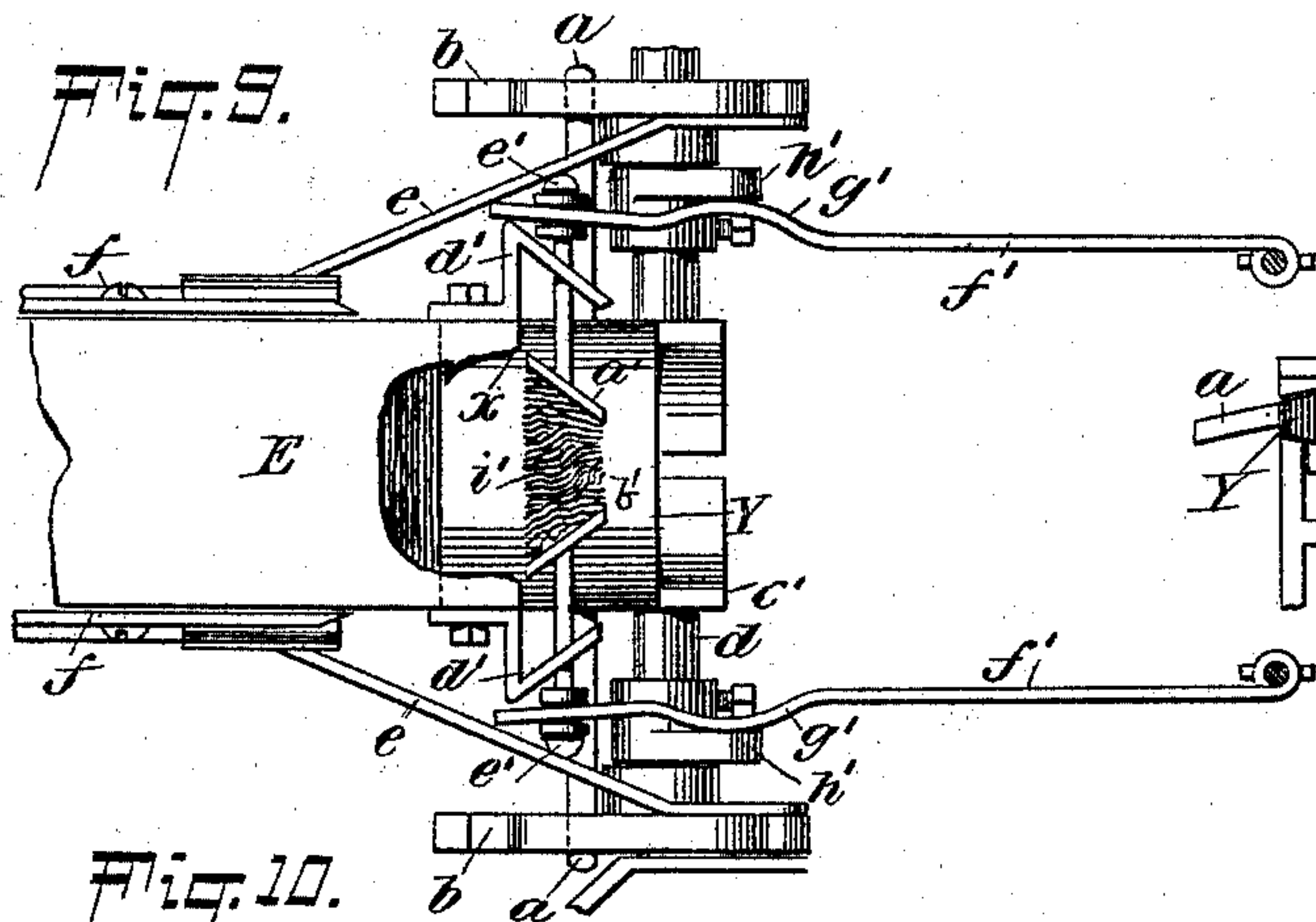


Fig. 11.

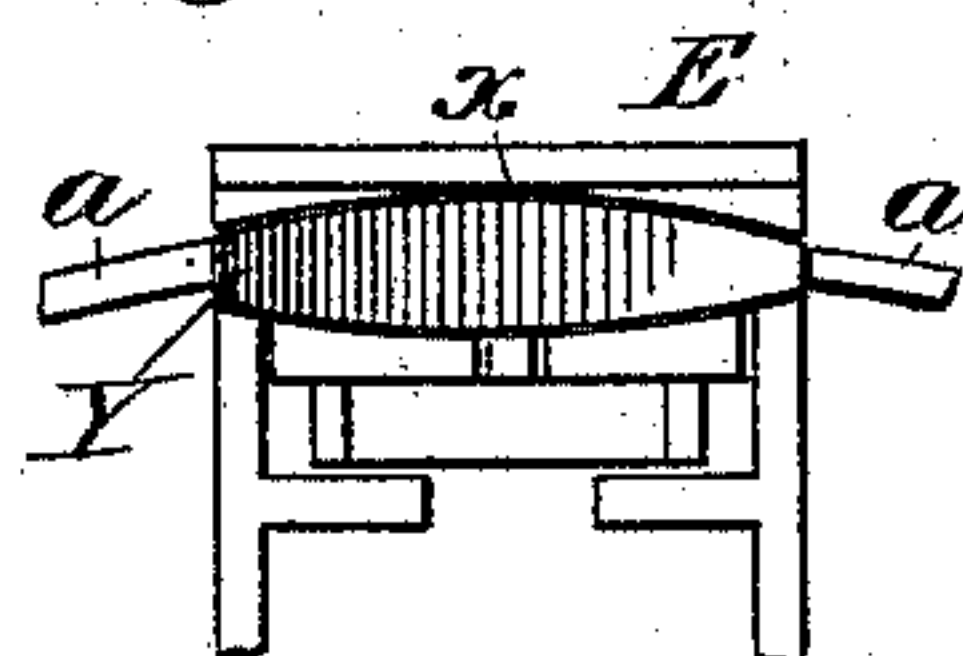
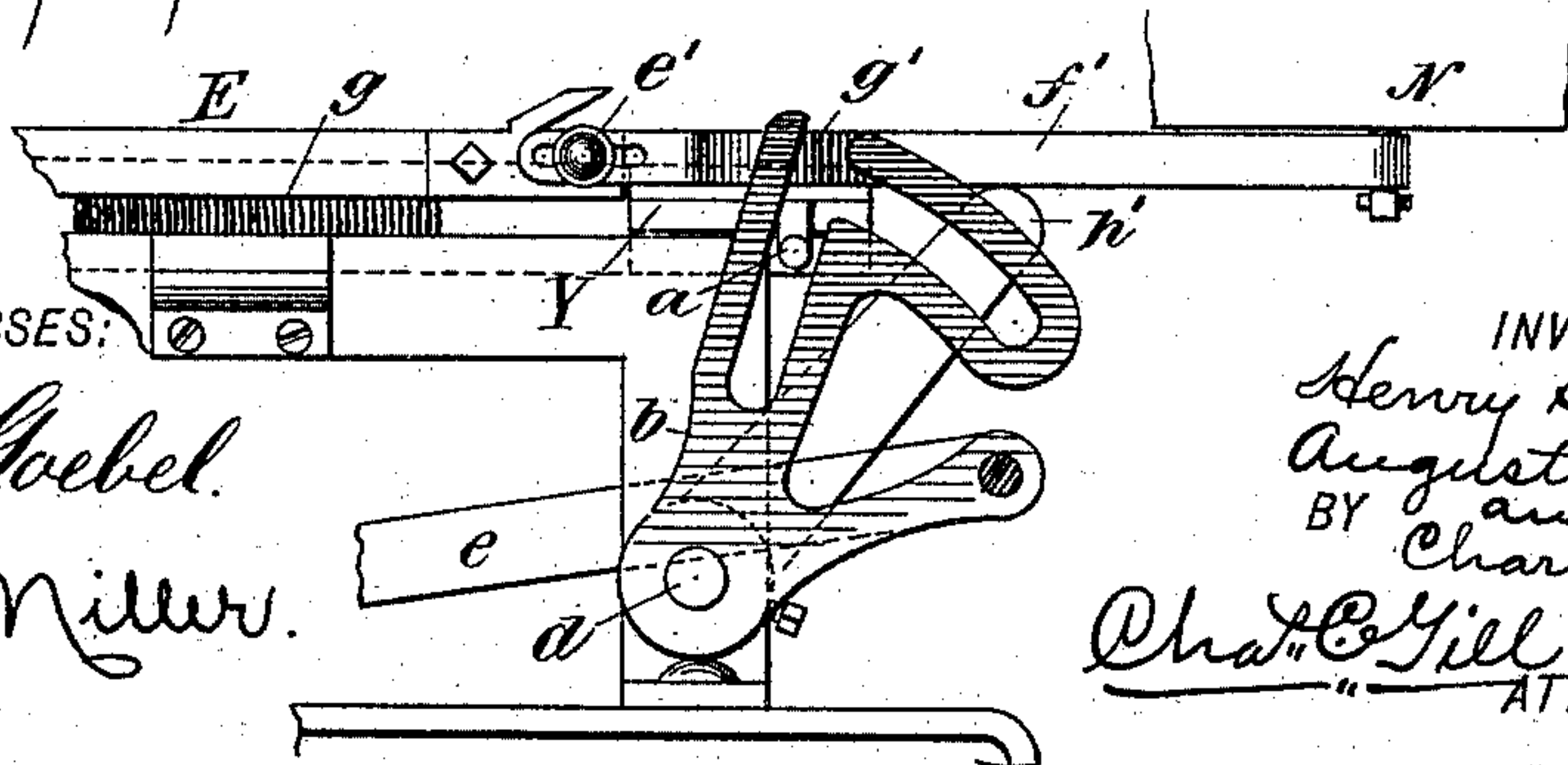


Fig. 10.



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UNITED STATES PATENT OFFICE.

HENRY SCHMIDT, AUGUST MERUNKA, AND CHARLES J. WERNER, OF NEW YORK, N. Y.

CIGAR-BUNCHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 492,438, dated February 28, 1893.

Application filed June 28, 1892. Serial No. 438,274. (No model.)

To all whom it may concern:

Be it known that we, HENRY SCHMIDT, AUGUST MERUNKA, and CHARLES J. WERNER, citizens of the United States, and residents of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Cigar-Bunching Machines, of which the following is a specification.

The invention relates to improvements in cigar bunching machines, and particularly to improvements in or further developments of the machines described and claimed in Letters Patent of the United States No. 459,416 granted to Henry Schmidt, August Merunka and Charles Werner on the 15th day of September, 1891, for a machine for preparing filler-tobacco for cigar bunches, and No. 465,499 granted to the same persons on the 22d day of December, 1891, for a cigar bunching machine.

The invention consists in special features of construction and combinations of parts hereinafter described and particularly pointed out in the claims.

Referring to the accompanying drawings, Figure 1 is a side elevation of a cigar bunching machine constructed in accordance with the invention. Fig. 2 is a central vertical longitudinal section, on an enlarged scale, of a portion of the feed mechanism and the end of the machine comprising the mechanism by which the separate charges of filler tobacco are severed from the main body thereof, carried to the rolling apron and table, and then rolled into the usual binder. Fig. 3 is a detached face view of the hinged leaf following the funnel by which the severed charges of filler tobacco are conveyed to the bunch rolling mechanism, said leaf and funnel being shown in their two extreme positions by full and dotted lines respectively in Fig. 2. Fig. 4 is a central vertical longitudinal section, on an enlarged scale, of the mechanism for feeding and preparing the filler tobacco, which is moved onward to the bunch forming mechanism illustrated in Fig. 2. Fig. 5 is a detached elevation of a yielding presser connected with the knife which severs the separate charges of tobacco for the bunches. Fig. 6 is a vertical section of same with a detached section of

the feed trough, showing the filler tobacco and the said yielding presser, the latter and the knife being in their upward position. Fig. 7 is a like view of same, showing the knife and yielding presser in their lower or depressed position. Fig. 8 is a top view of the end of the machine devoted to the feeding of the tobacco for the fillers. Fig. 9 is a top view, partly broken away, of a portion of same, with connecting devices hereinafter referred to for applying a small additional quantity of the tobacco to the middle portion of the layer of filler tobacco. Fig. 10 is a side elevation of same, and Fig. 11 is a detached end view of the receiver and reciprocating plunger for preparing the filler tobacco.

The machine consists of three main parts, the first being a pair of endless feed belts receiving and moving the tobacco to a reciprocating plunger; the second, a horizontal trough which receives the filler tobacco from said belts under the action of said plunger and in which the elongated body of filler tobacco is caused to travel forward by intermittent movements by a pair of endless chains carrying fingers or pins which enter slots formed in the cover of the trough and engage the tobacco; and, third, the bunch forming mechanism.

In the drawings A, B, designate the endless feed belts mounted on rollers C, D, and forming between them an inclined way adapted to receive the tobacco from the hand of the attendant and convey it downward to the entrance of the receiver E, which is in line and communicates with the main trough F, forming in reality an extension or part of said trough. The facing portions of said belts A, B, are backed by the rigid boards G, and at the outer portion of said belts are provided the tension rolls H, I, which are adjustable toward or from the belts by means of the plates J which carry the rolls and the set screws L passing through the slots M in the frame N supporting the rollers C, D, and which frame is itself removably supported at its outer end on the rod O and at its inner end on the transverse bar P, securing nuts Q, R, being provided to retain the frame N firmly in place. Upon removing the nuts R, the frame N carrying the rollers C, D, and belts

A, B, may be turned upward on the rod O, leaving the entrance to the receiver E clear for inspection. The rod O is sustained in the upper end of the arms S bolted to the main frame of the machine.

The width from one side of the machine to the other, of the space between the belts A, B, should normally be of a size adapted to the length of the filler for the longest bunch to be made, and this space may then be narrowed or graduated for the filler of shorter bunches by means of the laterally adjustable side plates T provided with the adjusting screws V and lock nuts W, as shown in Fig. 8. The screws V pass through threaded apertures in the sides of the frame N and have their inner ends swiveled in washers X affixed to the plates T; the screws thus support the plates T and effect their adjustment toward and from each other.

The rollers C, D, and belts A, B, have imparted to them an intermittent motion by means presently to be described, and thereby by intermittent stages the tobacco is carried downward to the entrance of the receiver E, into which it is driven and compressed by the reciprocating plunger Y, the movement of the belts A, B, alternating with that of the plunger Y, so that the belts will feed downward when the plunger is in its rearward position, shown in Fig. 4, and will remain at rest during the forward thrust of said plunger into the mouth of the receiver. The receiver E and plunger Y approximate in outline that of a cigar bunch, and said elements with the means for operating the plunger are shown in the aforesaid Letters Patent No. 459,416. The ends of the plunger Y have pins *a*, which are engaged by the rocking arms *b* mounted on the transverse shaft *d*; and said arms *b* are connected by rods *e* with the pivoted knives *f* and operate said knives to remove any surplus tobacco *g* which may extend through the opposite edges of the receiver E, as shown in Figs. 1 and 4, and as more fully shown and described in our aforesaid patent No. 459,416. In the present machine the rocking arms *b* are utilized through appropriate mechanism to effect the movement of the rollers C, D, and belts A, B, and as shown in Fig. 1, the ends of the shafts of the upper rollers C, D, are provided with gear wheels *h*, *i*, connected by the intermediate pinions *j*, while the gear wheel *i* is further provided with the ratchet wheel *m*, which receives motion from the pawl *n* and imparts the same through the gear wheels and pinions to the rollers C, D, and thence to the belts A, B. The pawl *n* is carried by the rocking arm *q* which is connected through the rod *r* and arm *t* with the member *w* forming a part of the rocking arms *b* above referred to. During the inward thrust of the plunger Y and the forward movement of the arms *b* the point of the pawl *n* will slide over the ratchet *m*, and at such time the belts A, B, will remain stationary, but during the return movement of the plun-

ger Y and arms *b* the pawl will engage and operate the ratchet and effect the movement of the rollers C, D, and belts A, B, causing the latter to feed the tobacco downward to the receiver E in the path of the plunger Y.

The arm *q*, rod *r*, and arm *t* are slotted, as shown in Fig. 1, to permit in a well known manner, the adjustment of the throw of the pawl *n*, and consequently the speed with which the belts A, B, will feed the tobacco to the receiver E. The inward thrust of the plunger Y brings the upper edge of the latter close against the shoulder *x* of the receiver E, and this action severs the tobacco within the entrance of the receiver from that portion thereof in the space between the belts A, B; and since the plunger Y tapers toward its ends, as in said Patent No. 459,416 and meets the corresponding edge or shoulder *x* of the receiver, it results that there is a little surplus tobacco at the ends of the plunger Y, this surplus being accumulated on the downward taper of the ends of the plunger. The surplus tobacco thus formed by the tapered ends of the plunger on the inward thrust of the latter we move inward toward the longitudinal center of the body of tobacco, and thus provide an extra proportion of the tobacco at the center of the mass and consequently the full amount of tobacco required at the middle of the bunches. The means by which the said surplus tobacco is moved inward are shown more fully in Figs. 8, 9 and 10, and consist of the diverging pusher-plates *a'*, *b'*, secured to laterally extending rods *c'*, which pass through guide brackets *d'* and are secured at their outer ends by heads *e'*, to the slotted inner ends of the spring side-arms *f'*, which are fastened at their outer ends to the frame N and are provided with the bowed portions *g'* in position to be acted on by the arms *h'* secured to the shaft *d*. During the inward thrust of the plunger Y, leaving the said small surplus of tobacco, the shaft *d* carries the arms *h'* against the spring arms *f'* and forces them, with the rods *c'* and plates *a'*, *b'*, inward toward each other, thus crowding the said surplus tobacco inward toward the center, as shown at *i'* in Fig. 9. Upon the return of the plunger Y to its outward position, the arms *h'* are relieved from the bowed portion of the spring arms *f'* and the latter withdraw the rods *c'* and plates *a'*, *b'*, leaving the surplus *i'* to fall in the path of the plunger and at the middle of the mass where it will be pressed onward by the succeeding inward thrust of said plunger. With each inward thrust of the plunger Y, the plates *a'*, *b'*, crowd the surplus tobacco *i'* toward the center, as shown, and hence in the mass of filler prepared there will be a due supply for the formation of well formed bunches.

Between the receiver E at one end of the machine and the bunch rolling mechanism at the other end of the machine, there is the trough F above referred to in which the mass

of filler tobacco prepared by the plunger Y is moved toward the point at which the separate charges of tobacco are severed and delivered to the rolling mechanism. The trough F has an interior corresponding with the interior of the receiver E, and has in its top the longitudinal slots j' to admit the pins or fingers m' carried by the endless chains n' , which travel on the sprocket wheels q' . The wheels q' are mounted on transverse shafts, one of which is provided with the gear wheel r' (see Fig. 1) to which motion is imparted and which insures the proper movement in the sprocket wheels q' and endless chains n' . There are two of the endless chains n' and four sprocket wheels for each chain, and, as shown in Figs. 2 and 4, the wheels at each end of the trough F are on different planes and the chains n' extend inward at an angle from the upper to the lower sprocket wheels for the purpose of bringing the pins or fingers m' as nearly as possible to a perpendicular plane at the time of their entrance to and withdrawal from the mass of filler tobacco in the trough F, the object of this arrangement being to prevent the pins from disturbing the consistency of the mass of tobacco while moving it onward to the bunch rolling mechanism. The lower section or bottom of the trough F contains the rollers w' , x' , carrying the endless belt y' , which in width equals the width of the interior of the trough and constitutes a section of the surface thereof; and the purpose of the belt y' is to aid in moving the mass of filler tobacco to the point at which it is engaged by the fingers or pins m' . The action of the plunger Y drives the mass of tobacco forward, while the belt y' moving in the direction of the tobacco draws it along until the pins m' engage it. The belt y' receives its motion from chains n' through the connecting gear wheels A', B', and the chains n' have imparted to them an intermittent motion through the gear wheels r' , C', ratchet D' (see Fig. 1) connecting rod E', lever F' and wheel G', the latter being mounted on the shaft H' and carrying the pin I', which during the revolution of the shaft H' comes into contact with and depresses the rear end of the lever F', thereby moving the rod E' upward and causing the pawl J' to engage and rotate the ratchet D' connected with the gear wheel C'. After the pin I' passes the lever F' during the revolution of the wheel G', the spring K' will draw said lever to its initial position against its adjustable stop L' preparatory to its further operation under the action of said pin I'.

The throw of the pawl J' and consequently the extent of each movement of the ratchet D' gear wheels r' , C' and chains n' , may be regulated by the adjustable screw stop L', which determines the upward movement of the free end of the lever F' and likewise the downward movement of the pawl J' to engage the ratchet D'. The action of the pawl J' and ratchet D' may be further controlled by the adjustment of the lower end of the connect-

ing rod E' with respect to the end of the lever F'—a slot being provided in the latter for that purpose. Since the chains n' , through the gear wheels A', B', impart motion to the belt y' , it follows that the regulation of the movement of the chains will control the feed of the tobacco through the trough F; and hence it is plain that the quantity of tobacco fed through the trough at each movement of the chains n' may be regulated at will in accordance with the size of the bunches to be produced.

At the outlet end of the trough F there is provided a vertically reciprocating knife M', which is operated from the shaft N' through intermediate mechanism to sever the separate charges of tobacco for the bunches from the mass fed along the trough F, as disclosed in our aforesaid patent No. 465,499. The knife M' and its operating mechanism having been embodied in said Patent No. 465,499 are not claimed herein, but in the present machine said knife is combined with a yielding presser O' shown more clearly in Figs. 2, 5, 6 and 7, the object of which is to descend upon and hold the end of the mass of filler tobacco during the descent of the knife M' to sever a charge for a bunch, and to act as a stripper for the knife during its ascent.

The presser O' is composed of the horizontal portion P' and vertical portion Q', the latter being held against the face of the knife M' by screws R' and allowed a movement free of said knife owing to the vertically elongated slots S' through which said screws pass. The horizontal portion of the presser O' supports the pins T' on which and confined below lugs V' are the springs W', which permit a yielding action in the presser and restore it to its normal position, shown in Figs. 2 and 6, upon the ascent of the knife M'. The charges of tobacco severed by the knife M' are conveyed to the rolling table X' by means of an oscillating funnel Y' containing a plunger Z', as described in said Patent No. 465,499. At the time of the movement of the chains n' and belt y' to move the mass of tobacco onward, the knife M' and presser O' are in their upward position, and the funnel Y' is in a horizontal position (as shown by full lines in Fig. 1 and dotted lines in Fig. 2) with its open mouth in line with said trough F for the purpose of receiving that portion of the tobacco fed beyond the vertical plane of the knife M'; and upon the cessation of the movement of the chains n' the knife M' and presser O' descend, the knife severing that portion of the tobacco in the funnel from the body thereof in the trough F, and the presser O' first descending upon the body of tobacco, where it remains, as shown in Fig. 7, until the knife has completed its descent and ascent. The springs W' yield to permit the knife M' to pass below the presser, and then upon the ascent of the knife restore the presser to its normal position with relation thereto. The presser O' on the ascent of the knife M' strips the tobacco therefrom

and retains the mass undisturbed down upon the bottom of the trough F. The portion of the tobacco which entered the funnel Y' when in a horizontal position, is carried downward to the rolling table X' by the turning of said funnel to its vertical position and the depression of said plunger Z', as set forth in the Patent No. 465,499. Upon the charge of tobacco being delivered to the table X', it will be rolled into a binder in the usual manner by means of an apron a'' and reciprocating roller b''. The mechanism shown in said Patent No. 465,499 may be used for rolling the bunch if desired and hence for completeness said mechanism is shown in the accompanying drawings, but the invention claimed herein is not confined to said rolling mechanism.

At the outlet end of the trough F is hinged the leaf d'', which has a spring tension upward owing to the provided spring e'', and in width is about equal to that of the funnel Y' and in length is sufficient to follow the funnel downward until it is in position to deliver the charge of tobacco to the rolling table X'. The leaf d'' is shown in its upward position in Figs. 1 and 2 and in its lower position in Fig. 2, and the purpose of the leaf is to prevent any tobacco escaping from the funnel Y' during its movement, from falling into the mechanism or being lost. The leaf d'' during the descent of the funnel Y' is turned downward by the latter and will direct any escaping tobacco to the table X'; and upon the ascent of the funnel the leaf will under the action of the spring e'' turn upward to the position shown by dotted lines in Fig. 2, thus following the funnel preparatory to catching any particles of tobacco which may escape therefrom on its succeeding descent. The shaft H' may be considered the driving shaft and imparts its motion to the shaft N' through the chain f''. The shaft N' has for its duty the operating of the knife M', funnel Y' and plunger Z', as described and shown in said Patent No. 465,499, while the shaft H', as also described in said patent, actuates the bunch rolling mechanism. In the present machine the shaft H' has mounted upon it the gear wheel g'' which engages the gear wheel h'' mounted on the shaft i''; and upon the shaft i'' is mounted the eccentric j'', whose rod m'' is connected with a knuckle n'' extending from the rock-shaft d. The motion of the shaft H' is through the gear wheels g'', h'', imparted to the shaft i'', and the shaft i'' actuates the rod m'' to rock the shaft d and arms b which as above described operate the knives f, the plunger Y and belts A, B.

In the operation of the machine, the filler tobacco is fed by hand into the space between the belts A, B, which, owing to their intermittent movement carry the same downward by successive stages to the entrance of the receiver E into which it is driven and compacted by the reciprocating plunger Y, the effect of the feeding downward by the belts A, B, and the compacting by the plunger Y

being the gradual formation of a compact mass of tobacco approximating in cross section the general form of a cigar. This mass of tobacco is fed onward partly by the pushing action of the plunger Y adding fresh charges to it, and partly by the belt y' and fingers m' on the chains n'. The chains n' and belt y' have an intermittent motion, as above described, and this is so timed and adjusted that only the proper amount of tobacco for a bunch will be fed from the end of the trough F and into the then up-turned funnel Y' preparatory to being severed by the descent of the knife M'. The part of the tobacco fed into the funnel Y' and then severed is carried downward to the bunch rolling mechanism in a well known manner and by the said mechanism rolled into a binder.

In making use of the machine, the space between the aprons A, B, may be kept reasonably full of tobacco, since their motion is not continuous and only a proper quantity of the tobacco will be fed by them to the receiver E. When it is desired that long filler bunches shall be made, the leaves of tobacco will be broken into appropriate lengths to pass between the side plates T and will be slightly crushed or bunched together in the hands of the attendant prior to being given to the belts A, B, it being better that the leaves be not spread out flat when fed to the machine.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. The feed trough for filler tobacco, the receiver and the reciprocating plunger in line therewith, combined with the endless feed belts A, B, leading to said receiver, and mechanism for imparting an intermittent motion to said belts; substantially as set forth.

2. The feed trough, the receiver, and the reciprocating plunger in line therewith, combined with the rollers C, D, the endless feed belts thereon leading to said receiver, and the hinged frame N carrying said rollers and belts; substantially as and for the purposes set forth.

3. The feed trough, the receiver, and the plunger in line therewith, combined with the endless feed belts A, B, leading to said receiver, the adjustable plates T between said belts, and mechanism for imparting an intermittent motion to said belts; substantially as set forth.

4. The feed trough, the receiver and the plunger in line therewith, combined with the rollers C, D, the endless traveling belts A, B, leading to said receiver, the adjustable tension rolls H, I, and the hinged frame N carrying said rollers, belts and rolls; substantially as set forth.

5. The feed trough, the receiver, and the plunger in line therewith, combined with the endless feed belts leading to said receiver, mechanism for imparting to said belts an intermittent motion, and the laterally reciprocating pushers a', b', above said plunger; substantially as and for the purposes set forth.

6. The feed trough, the receiver, and the plunger in line therewith, combined with the endless feed belts leading to said receiver, mechanism for imparting to said belts an intermittent motion, the pushers *a'*, *b'* over said plunger, the rods *c'* for said pushers, the spring side arms *f'* connected with said rods, and the rocking arms *h'* acting on said arms; substantially as set forth.
7. The trough for the mass of filler tobacco, the top of said trough having the longitudinal slots *j'*, combined with the endless chains *n'* having fingers *m'* to enter said slots, and the sprocket wheels carrying said chains, the upper of said wheels being set outward from the lower wheels and the chains extending at an angle between the upper and lower wheels at the ends of said trough; substantially as set forth.
8. The feed trough, the receiver and the plunger in line therewith, combined with the endless chains carrying fingers to move the tobacco in said trough to bunch forming mechanism; substantially as set forth.
9. The feed trough, the receiver, and the plunger in line therewith, combined with the endless belt *y'*, located in the bottom of said trough and the endless chains *n'*, carrying fingers to move the tobacco in said trough to bunch forming mechanism; substantially as set forth.

10. The feed trough for filler tobacco, and mechanism for rolling the bunch, combined with the reciprocating knife for severing the charges for the bunches, and the combined yielding presser and stripper *O'* carried by said knife, the said presser and stripper being composed of the horizontal portion *P'* and vertical portion *Q'*, the latter being against the face of the knife but allowed a movement free of the knife; substantially as and for the purposes set forth.

11. The feed trough for filler tobacco, the reciprocating knife for severing the charges thereof for the bunches, and bunch rolling mechanism, combined with the oscillating funnel moving between said knife and said bunch rolling mechanism, the hinged leaf *d''*, and the spring exerting an upward tension against said leaf and causing it to follow the said funnel; substantially as and for the purposes set forth.

Signed at New York, in the county of New York and State of New York, this 21st day of June, A. D. 1892.

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