

No. 630,786.

Patented Aug. 8, 1899.

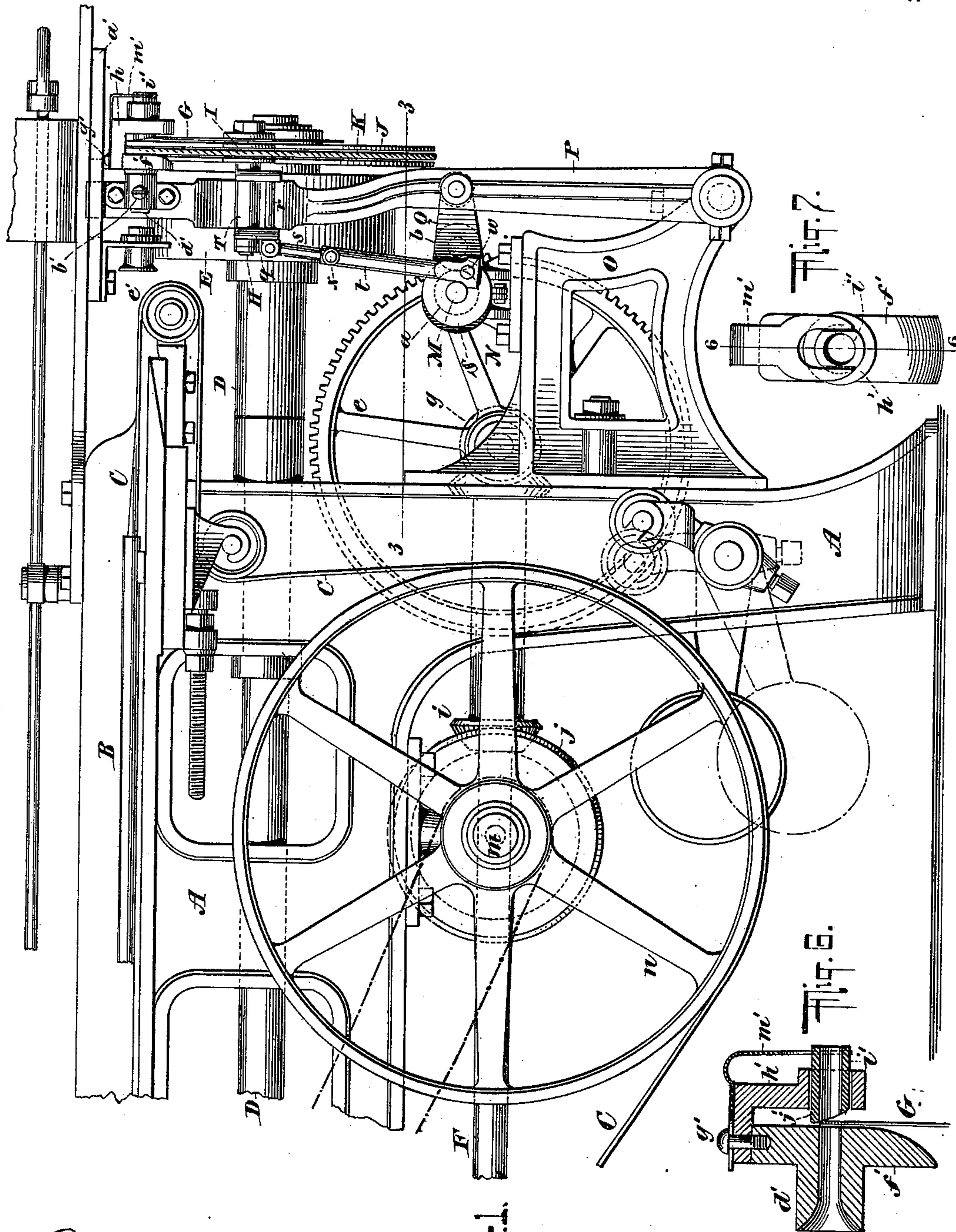
J. H. VENNERS.


CONTINUOUS CIGARETTE MAKING MACHINE.

(Application filed May 7, 1896.)

(No Model.)

2 Sheets—Sheet 1.



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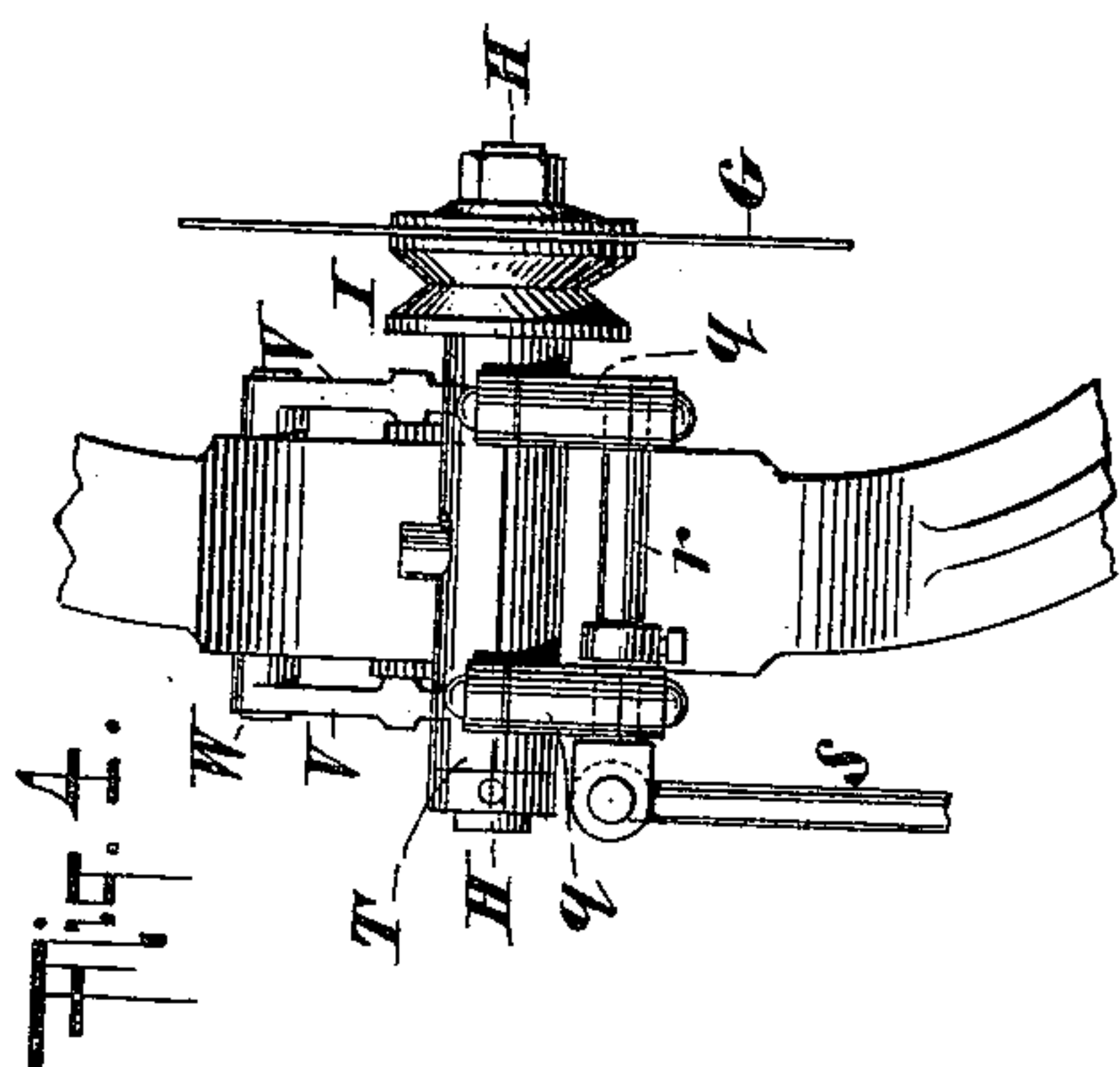
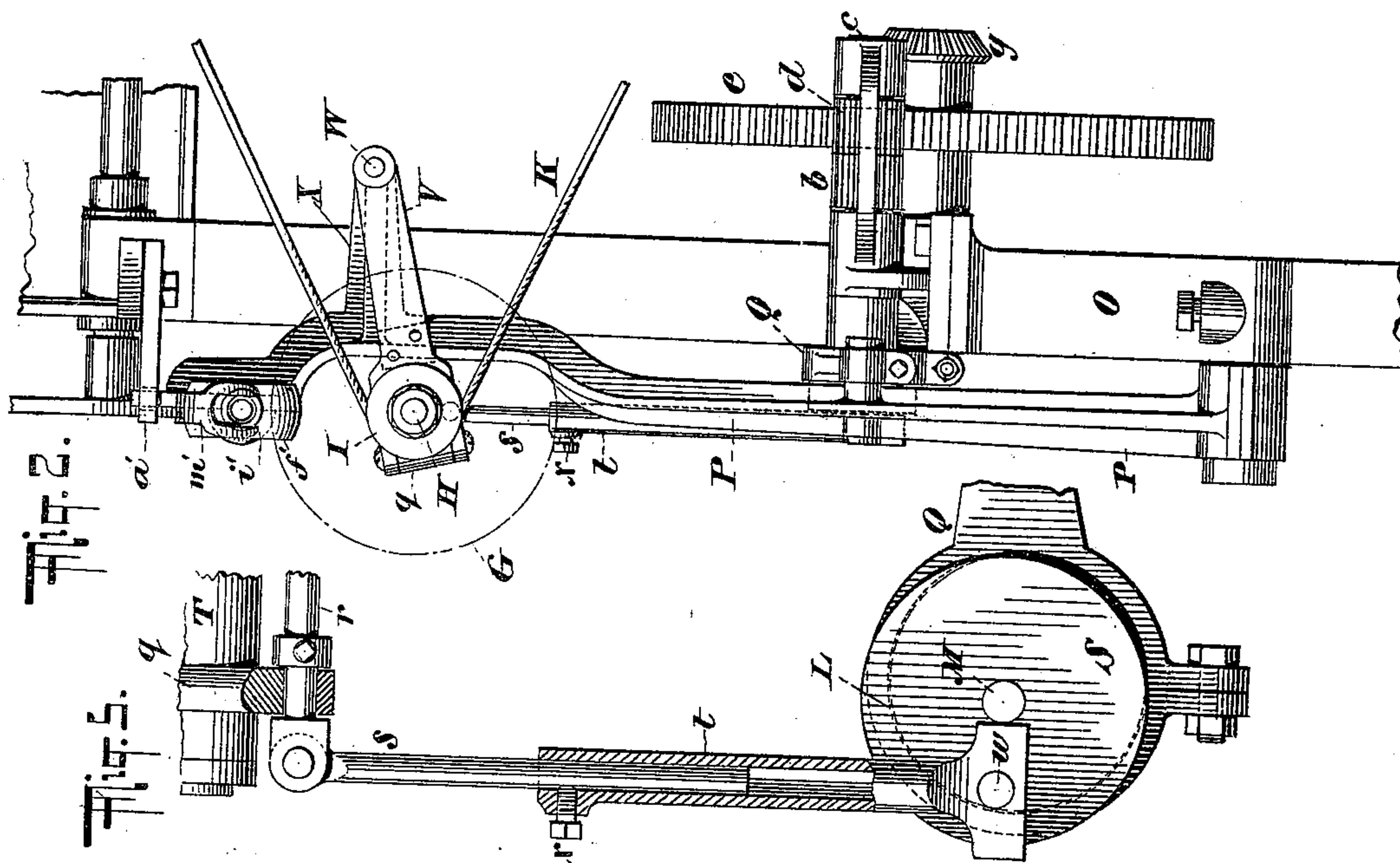
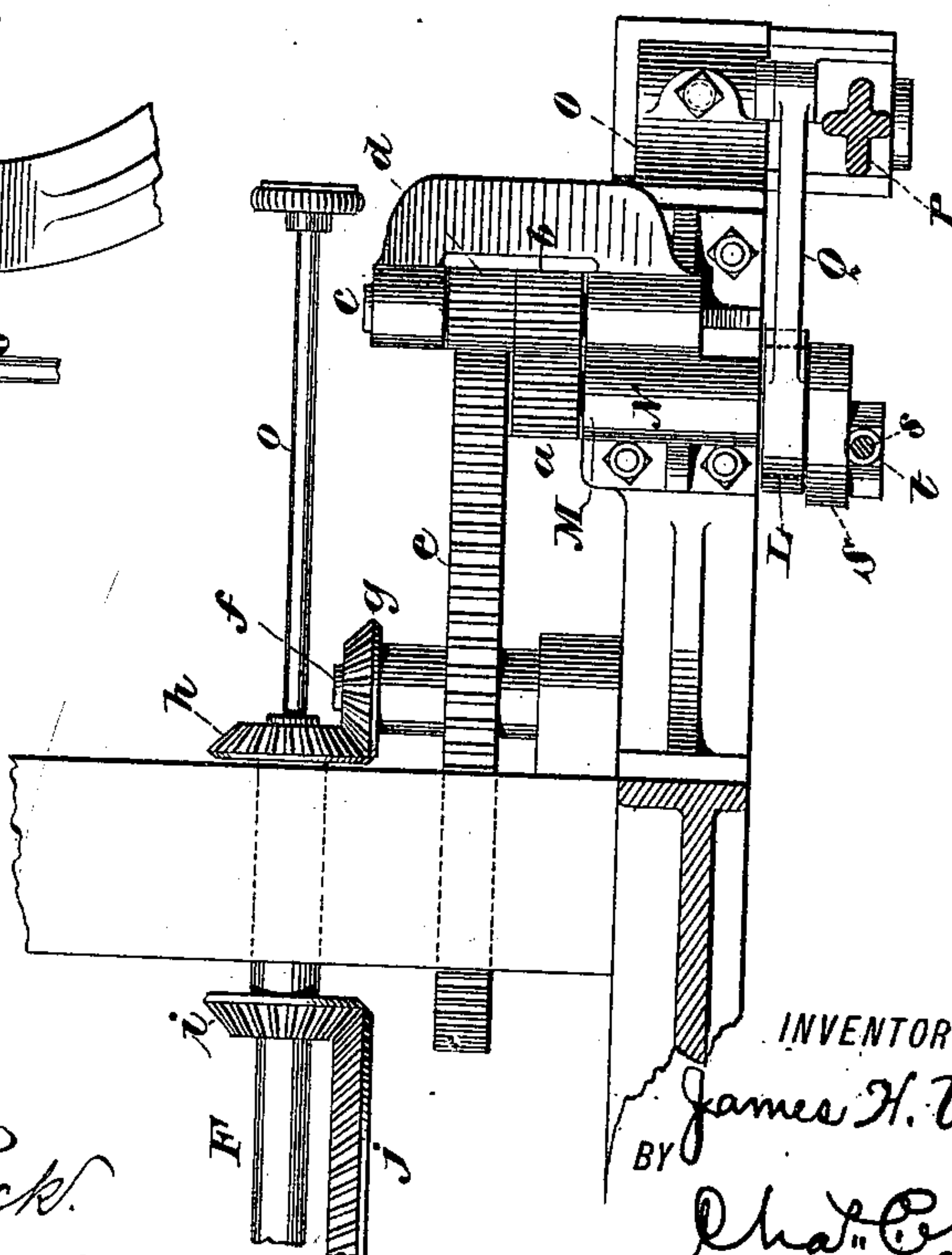


Fig. 3.



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UNITED STATES PATENT OFFICE.

JAMES H. VENNERS, OF NEW YORK, N. Y.

CONTINUOUS-CIGARETTE-MAKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 630,786, dated August 8, 1899.

Application filed May 7, 1896. Serial No. 590,528. (No model.)

To all whom it may concern:

Be it known that I, JAMES H. VENNERS, a citizen of the United States, and a resident of New York, (Brooklyn,) in the county of Kings and State of New York, have invented certain new and useful Improvements in Continuous-Cigarette-Making Machines, of which the following is a specification.

The invention relates to improvements in continuous-cigarette-making machines, and pertains particularly to cutting mechanism for cutting the continuous cigarette-rod into appropriate lengths for the market.

The invention is applicable generally to continuous-cigarette-making machines, but in this application I have illustrated it as applied to the continuous-cigarette-making machine embraced in the application for Letters Patent of the United States filed by me on March 5, 1896, Serial No. 581,968, now Patent No. 593,385, dated November 9, 1897.

The object of my invention is to produce a cutting mechanism of the character referred to which may be run with entire safety and efficiency at a very high rate of speed.

The invention will be fully understood from the detailed description hereinafter presented, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of the end of a cigarette-machine having applied thereto the cutting mechanism constituting my invention. Fig. 2 is an end view of same. Fig. 3 is a horizontal section of same on the dotted line 3 3 of Fig. 1. Fig. 4 is an enlarged detached side elevation of a portion of the cutting mechanism. Fig. 5 is an enlarged side elevation, partly in section, of a portion of the cutter-actuating mechanism. Fig. 6 is an enlarged central vertical longitudinal section through a detached part of the cutting mechanism and hereinafter specifically referred to, and Fig. 7 is an outer end view of same.

In the drawings, A designates a portion of the main frame of the cigarette-making machine; B, the sealing-tube, through which the continuous wrapped cigarette is drawn by means of a belt C; D, the main driving-shaft; E, the power belt-wheel, and F the main auxiliary driving-shaft, which receives its motion through gearing (not shown) connecting it with the main driving-shaft E.

The parts above designated by letter form no part of the present invention, which is confined to the cutting mechanism solely, without regard to the special features for forming, moving, or maintaining the continuous cigarette-rod.

The cutter is lettered G and is mounted upon a short shaft H, upon which is secured the grooved pulley-wheel I, the latter being connected with the large grooved sheave J and receiving motion therefrom by means of the cord or other suitable connection K. The sheave J is secured upon the rear end of the main driving-shaft D and receives its motion from said shaft. The cutter-wheel G revolves with the shaft H and has imparted to it a slight reciprocating motion in line with the length of the cigarette-rod, and also a vertical motion, whereby it is caused to ascend against and pass through said rod for the purpose of severing the same. The means for imparting to the revolving cutter G its longitudinal reciprocating and vertically-reciprocating movements form essential features of this application, and both of these movements are directly attained from an eccentric L and crank-pin *w*, mounted upon a shaft M, which by suitable intermediate gearing receives its revolving motion from the auxiliary driving-shaft F. The shaft M has upon its inner end the pinion wheel *a* in engagement with the pinion-wheel *b* on the auxiliary shaft *c*, carrying the pinion-wheel *d*, the latter being in engagement with the gear-wheel *e*, mounted upon the shaft *f*, having upon its inner end the beveled pinion-wheel *g*, which is in direct engagement with the beveled pinion-wheel *h*, secured upon the end of said auxiliary driving-shaft F, as illustrated in Fig. 3. The beveled pinion-wheel *i*, also secured upon the auxiliary driving-shaft F, engages the beveled gear-wheel *j*, mounted upon the shaft *m*, the latter carrying the driving-wheel *n* (see Fig. 1) for moving the belt C, which operates to draw the continuous cigarette-rod through the tube B and move said rod continuously to the cutting mechanism. The gear-wheels *i j* and driving-wheel *n* form well-known parts in this art and are shown herein for purposes of illustration merely. The rod *o* (shown in Fig. 3) is a known clutch-rod and forms no part of the present invention. The shaft M,

which receives its motion from the auxiliary driving-shaft F through the train of gears *a*, *b*, *d*, *e*, *g*, and *h*, is mounted in the bearing N, which is secured upon the bracket I, connected with the main frame A of the machine, as illustrated more clearly in Fig. 1. Upon the lower rear end of the bracket O is pivotally mounted the bar P, which extends upward to the upper part of the machine and is actuated through the arm Q from the shaft M. The arm Q is pivotally connected to the bar P and at its outer end is in the form of an eccentric-strap which incloses the periphery of the eccentric L, which is secured on the shaft M and revolves therewith. Upon the outer side of the eccentric L is formed or secured the crank-wheel S, carrying the crank-pin *w*, whereby through the mechanism hereinafter described the cutter G is given its vertical movement. The eccentric L operates through the arm Q to impart through the bar P the reciprocating movement to the cutter G. The one shaft M therefore actuates, through intermediate mechanism, the cutter G to have both a vertical movement and a longitudinal movement.

The shaft H, carrying the cutter G, is mounted in the bearing T, which is supported upon the outer ends of the arms V V, passing inward upon opposite sides of the bar P and pivotally mounted upon the short rod W, which extends through the outer end of an arm X, integral with and extending inward from the said bar P, as illustrated more clearly in Figs. 2 and 4. The shaft H, carrying the cutter G and mounted in the bearing T, is enabled to have a limited swinging movement with the arms V V, and thereby while continuing to rapidly revolve may have imparted to it the desired vertical movement against the cigarette-rod. Upon the front of the bearing T are the auxiliary bearing-blocks *q*, which at their lower ends receive the rod *r*, carrying in a pivotal manner at its exposed end the vertical rod *s*, which extends downward within the tubular rod *t*, pivotally secured at its lower end to the crank-pin *w*. During the revolving motion of the shaft M, eccentric L, and crank-wheel S the rods *t s* are given a vertical reciprocation from the crank-pin *w* and, through the rod *r* and bearings *q*, impart to the bearing T a like reciprocation, whereby the cutter G is caused to elevate and pass through the cigarette-rod and then descend to its normal position. The arms V V admit of the vertical movement of the bearing T and cutter G without interfering with the continuous revolution of the pulley-wheel *i* under the action of the belt or cord K. The rod *s* is adjustable by means of the screw *x* within the hollow rod *t* in order to compensate for the wear on the knife and render the latter especially suited for cutting the cigarette-rod under any and all conditions and adjustments of the various parts of the machine.

The upper end of the bar P passes through

a slot in the plate *a'*, as shown in Fig. 1, in order that the said bar may at its upper end be guided and firmly maintained. The upper portion of the bar P has secured to it, by means of the strap *b'*, the tube *d'*, which has a flaring entrance and is in direct alinement with the stationary tube *e'*, through which the cigarette-rod passes on its way to and through the said tube *d'*. At the outer end of the tube *d'* is formed the plate *f'*, whose outer surface forms a cutting edge and is tapered downward and inward, as illustrated in Fig. 6. To the plate *f'* is secured, by means of a screw *g'*, the bracket *h'*, within whose end is mounted the tube *i'*, which is in alinement with the tube *d'* and has the tapered cutting edge *j'* facing the plate *f'*. The tube *i'* has a continuous spring tension toward the plate *f'* by reason of the spring *m'*, secured by said screw *g'* and thence extending outward and downward and engaging the opposite side edges of the outer end of said tube *i'*. The cutter G severs the cigarette-rod while the latter is within the tubes *d' i'*, and said cutter during the severing operation ascends between the plate *f'* and tube *i'*, said plate and tube forming edges between which the cutter may work. During the ascent of the cutter G between the plate *f'* and tube *i'* the latter is forced outward from said plate *f'* by and in order to permit the upward passage of the said cutter, and upon the descent of the latter the spring *m'* will return said tube *i'* to its normal position against said plate *f'*. The bevel or taper on the inner end of the tube *i'* extends downward and outward from the upper edge of the tube to the lower edge thereof, and hence said tube will not be moved outward by the cutter G until the latter has almost completely severed the cigarette-rod, and the cigarette-rod will remain firmly maintained from above by said tube against the upward pressure of the cutter until the latter has passed almost entirely through said rod, the result being that the cutter is enabled to make a very smooth even cut without in any degree bending or compressing the cigarette-rod or breaking through the upper portion of the same or its paper wrapper. The tube *d'*, plate *f'*, bracket *h'*, and tube *i'* are rigid upon and move with the upper end of the bar P, and hence will have a slight reciprocating motion with said bar under the action of the eccentric L. The tubes *d' i'*, through which the cigarette-rod passes, thus move rearward with the cigarette-rod during the time the cutter G is acting to sever the same and effectually maintain said rod under the action of the cutter while severing the same.

The cutter G receives its longitudinal reciprocating motion from the eccentric L and its vertical reciprocation from the crank-pin *w*, both eccentric and crank-pin being on the end of the shaft M, and the cutter has for its coöperating edges the facing surfaces of the plate *f'* and tube *i'*, which only separate suf-

ficiently to permit the entrance between them of the cutter.

What I claim as my invention, and desire to secure by Letters Patent, is—

5 1. In a continuous-cigarette-making machine, the cutting mechanism comprising the revoluble cutter, the vertically-swinging bearing therefor, by which said cutter is given a substantially direct vertical reciprocation, and the longitudinally-movable support for
10 said bearing, combined with the eccentric positively connected with said support for positively moving it forward and rearward to effect the longitudinal reciprocation of the
15 said cutter in line with the cigarette-rod, and the crank positively connected with said bearing for positively moving it upward and downward to effect the cutting of the cigarette-rod; substantially as set forth.

20 2. In a continuous-cigarette machine, cutting mechanism, comprising a revoluble cutter, a vertically-swinging bearing therefor, by which said cutter is given a substantially direct vertical reciprocation, and a longitudinally-movable support for said bearing, an eccentric positively connected with said support
25 for moving it forward and rearward to effect the longitudinal reciprocation of the said cutter in line with the cigarette-rod, and a crank positively connected with said bearing for moving it upward and downward, substantially as described.

3. In a continuous-cigarette-making machine, the cutting mechanism comprising the
35 pivoted bar P, and the eccentric for moving said bar, combined with the revoluble cutter, the movable bearing for the shaft of said cutter and swung from said bar P, and the crank connected by a rod with said bearing for elevating and lowering said cutter; substantially as set forth.

4. In a continuous-cigarette-making machine, the cutting mechanism comprising the
45 pivoted bar P, and the eccentric for moving said bar, combined with the revoluble cutter,

the movable bearing for the shaft of said cutter and swung from said bar P, and the crank on the same shaft with said eccentric and connected by a rod with said bearing for elevating and lowering said cutter; substantially as set forth. 50

5. In a continuous-cigarette-making machine, the cutting mechanism comprising the pivoted bar P, and the eccentric for moving said bar, combined with the revoluble cutter, the movable bearing for the shaft of said cutter and swung from said bar P, the crank, and the rod formed of adjustable sections connecting said crank with said bearing for elevating and lowering said cutter; substantially as set forth. 60

6. In a continuous-cigarette-making machine, the cutting mechanism comprising the bar P, the eccentric L, and the arm Q connecting said eccentric and bar for actuating
65 the latter from the former, combined with the revoluble cutter, the bearing for the cutter-shaft, the swinging arms connected at one end to said bearing and at the other end to said bar, the crank on a driving-shaft, and the rod connecting said crank with said bearing; substantially as set forth. 70

7. In a continuous-cigarette-making machine, the cutting mechanism comprising the bar P, the revoluble cutter, and the movable
75 bearing for the cutter-shaft swung from said bar P, combined with the combined eccentric and crank on a driving-shaft, the arm connecting said eccentric with said bar, and the rod connecting said crank with said bearing, whereby from the one shaft the cutter receives both its longitudinal and vertical reciprocations; substantially as set forth. 80

Signed at New York, in the county of New York and State of New York, this 5th day of May, A. D. 1896. 85

JAMES H. VENNERS.

Witnesses:

CHAS. C. GILL,

E. JOS. BELKNAP.