

6 Sheets—Sheet 1.

No. 475,341.

Patented May 24, 1892.



Fig. 15.

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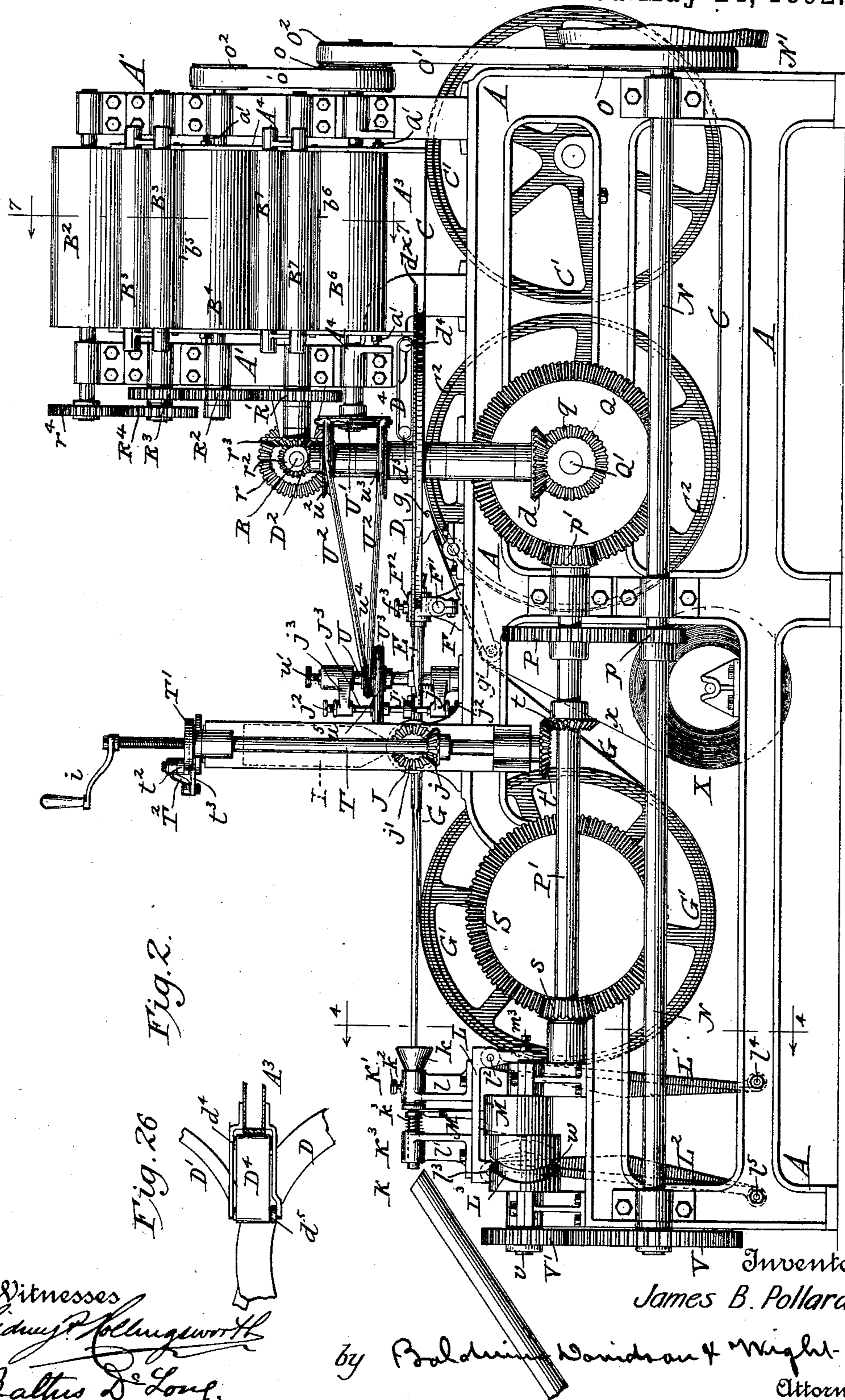
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6 Sheets—Sheet 2.

J. B. POLLARD.
CIGARETTE MACHINE.

No. 475,341.

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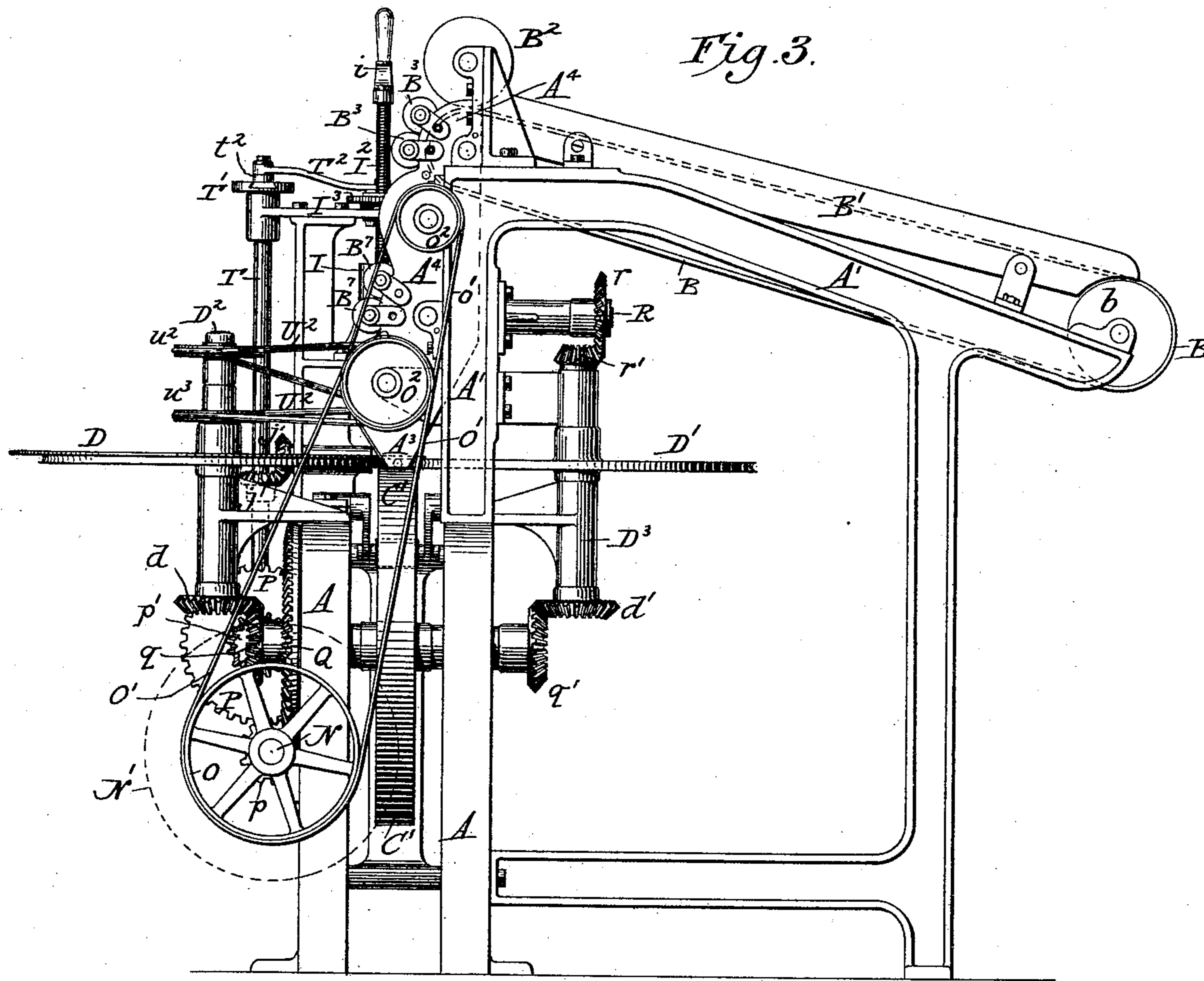
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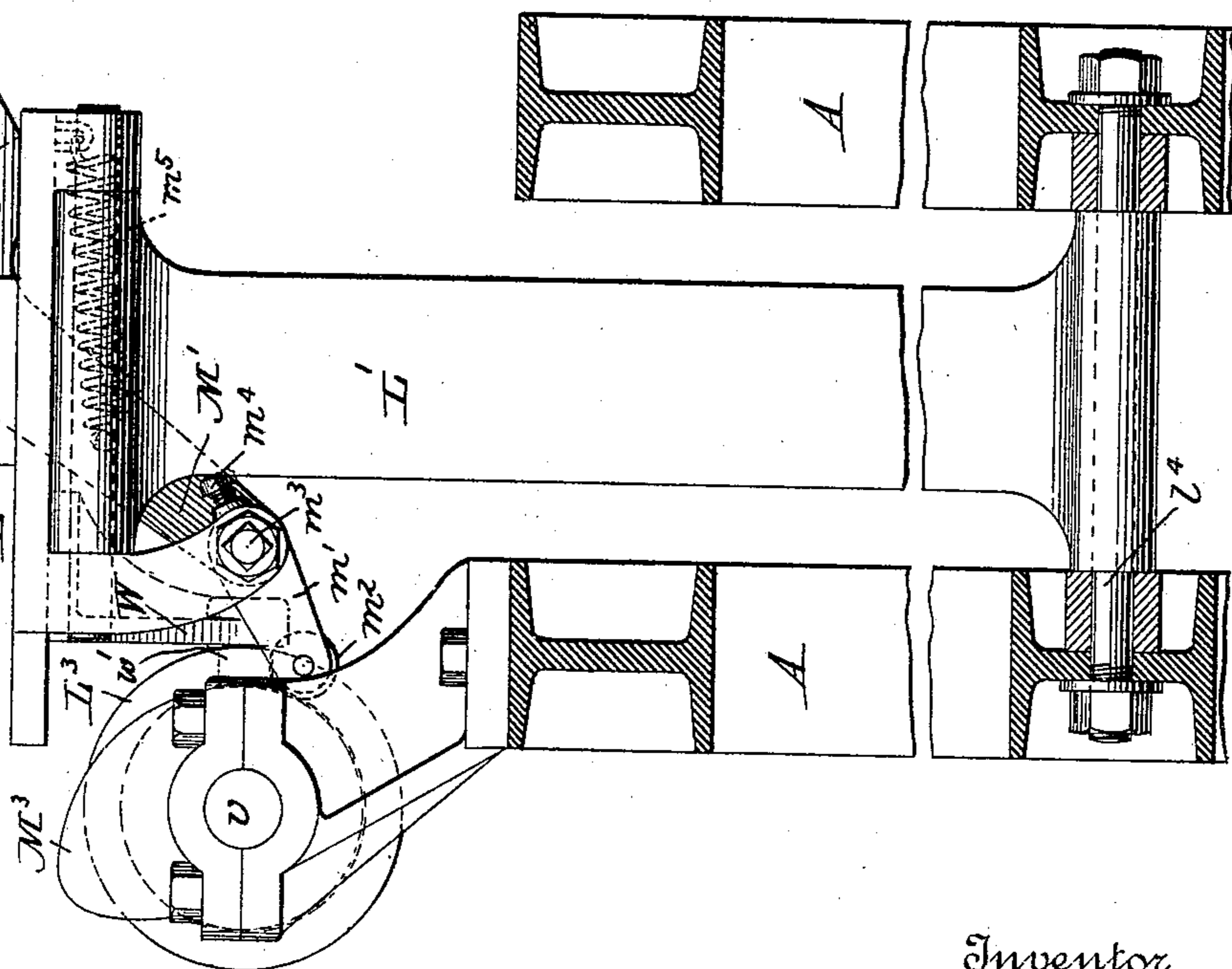
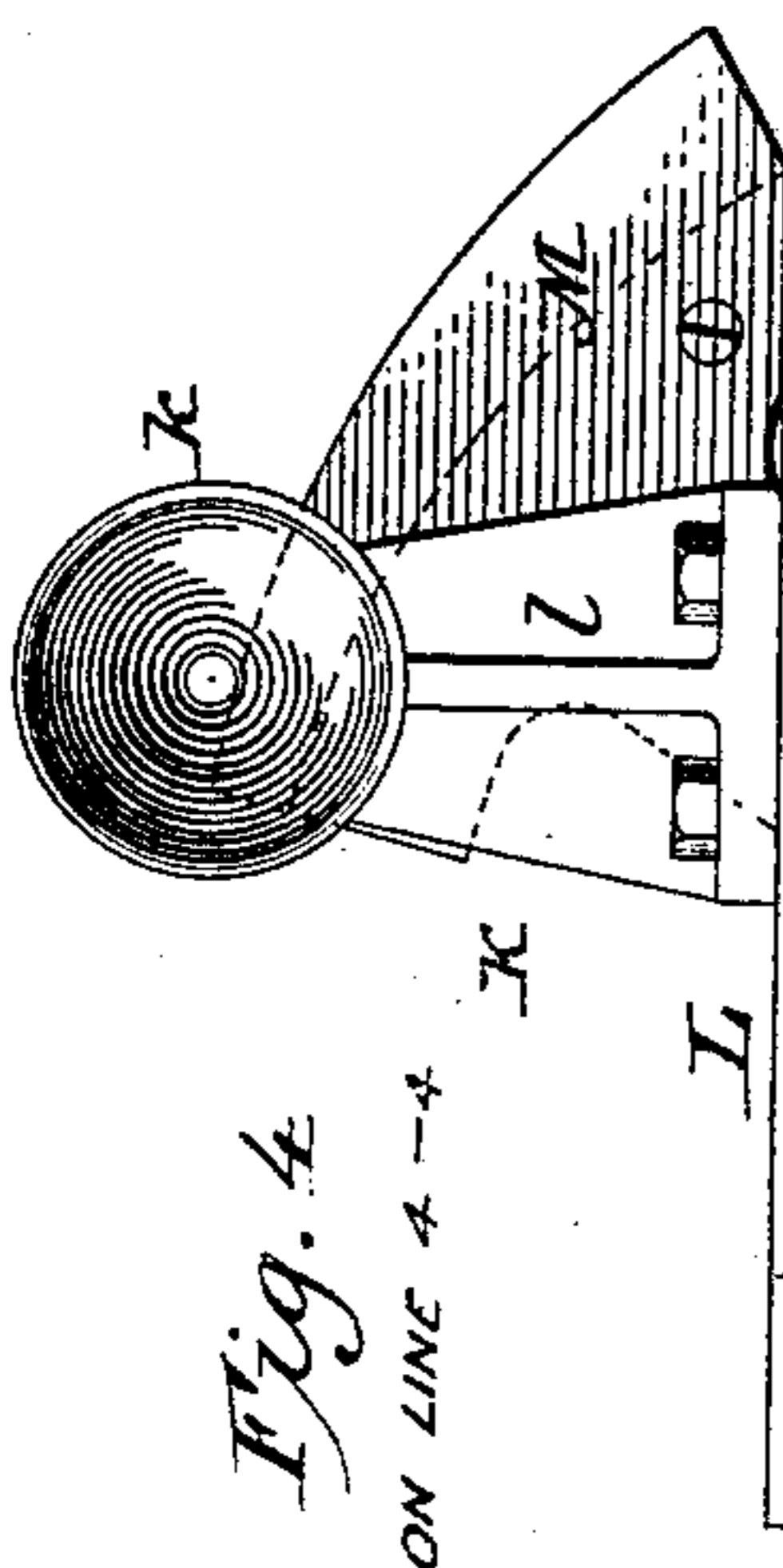
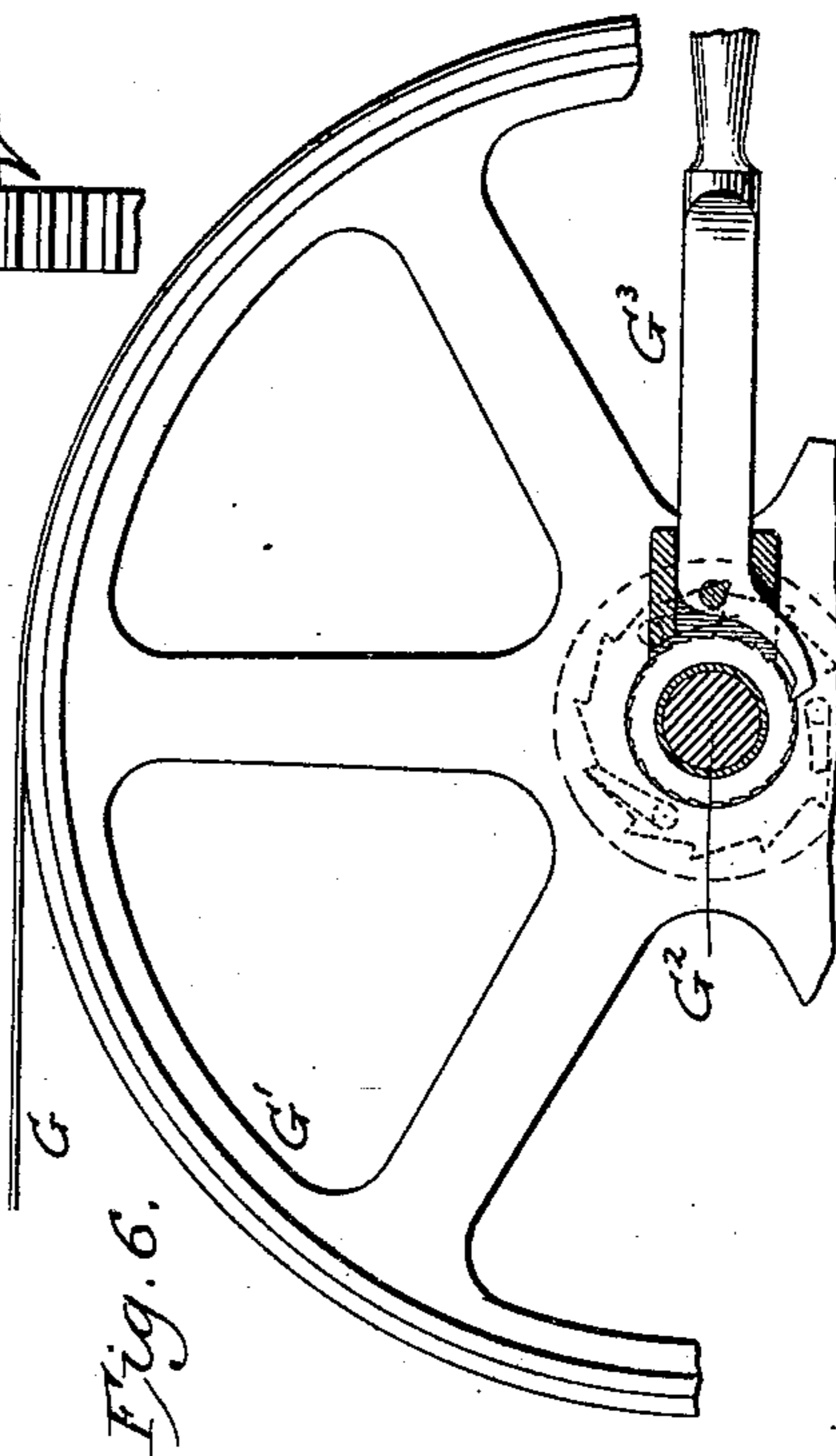
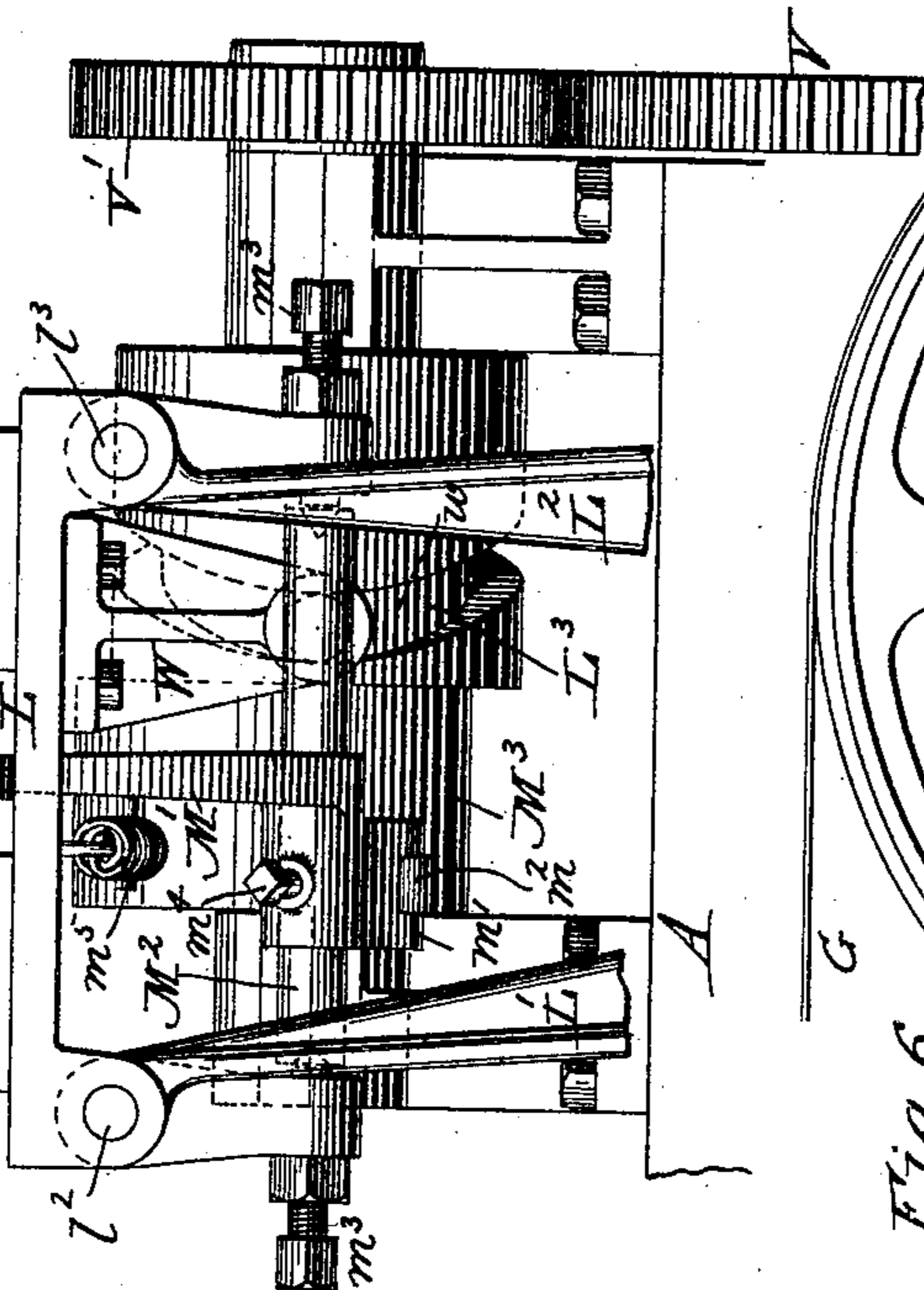
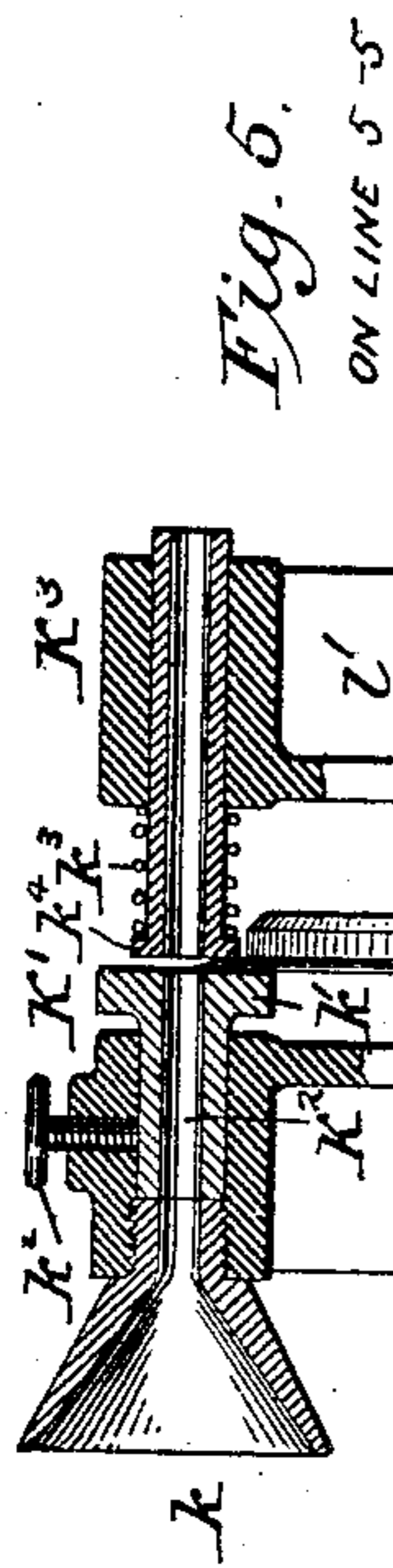
(No Model.)

6 Sheets—Sheet 4.

J. B. POLLARD.
CIGARETTE MACHINE.

No. 475,341.

Patented May 24, 1892.



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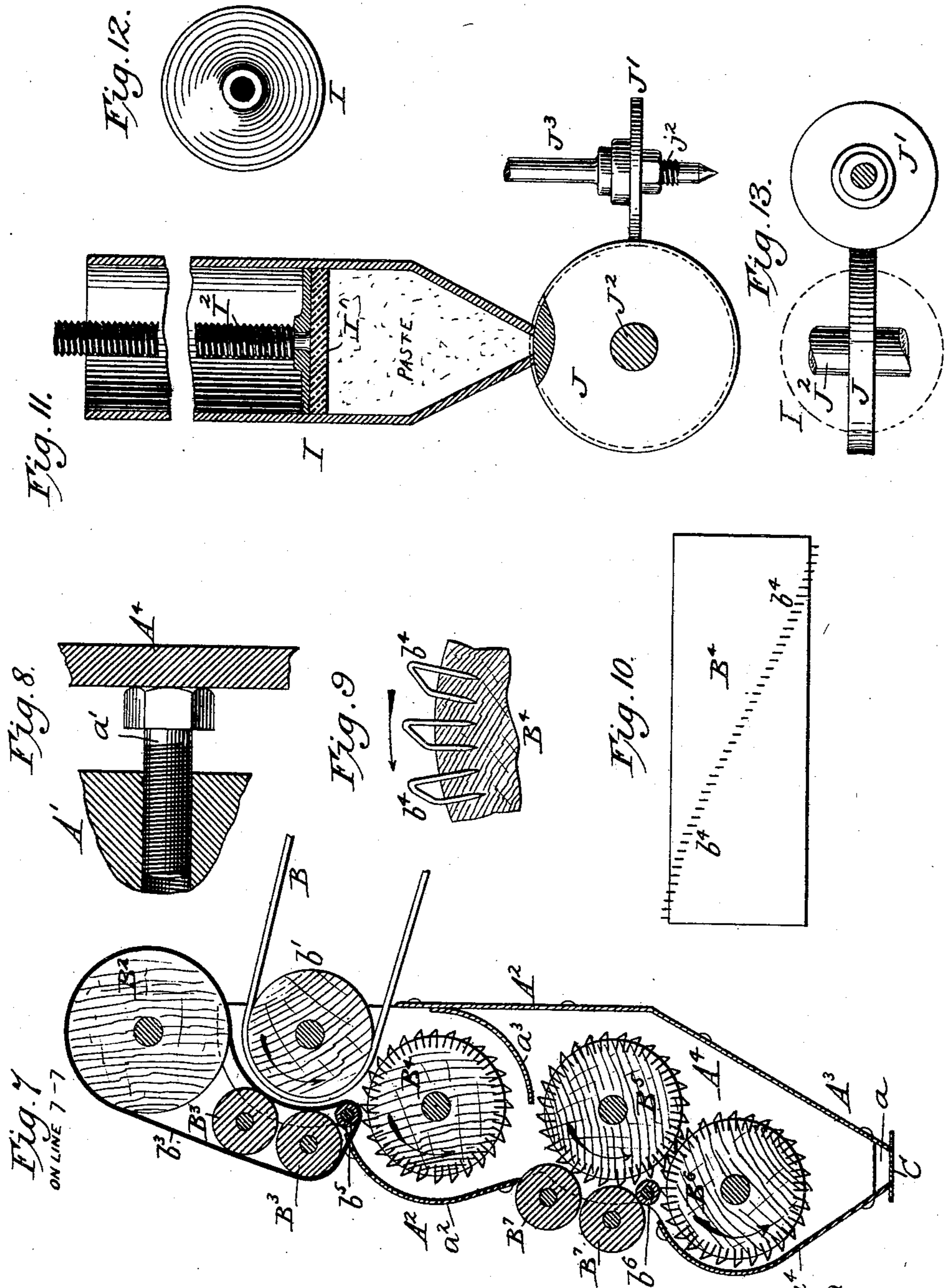
(No Model.)

6 Sheets—Sheet 5.

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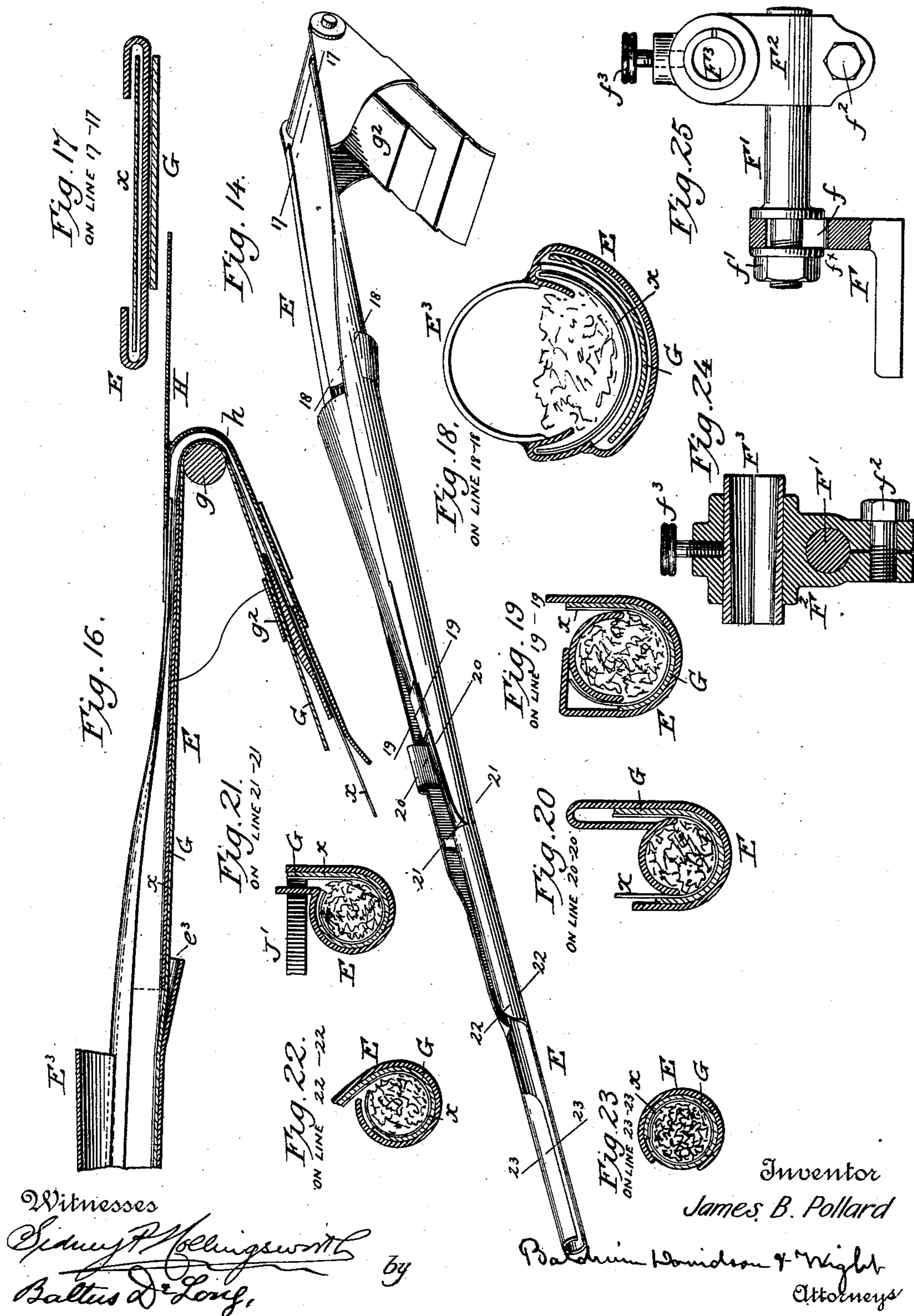
(No Model.)

6 Sheets—Sheet 6.

J. B. POLLARD.
CIGARETTE MACHINE.

No. 475,341.

Patented May 24, 1892.



UNITED STATES PATENT OFFICE.

JAMES BAKER POLLARD, OF ROANOKE, VIRGINIA, ASSIGNOR TO THE INTERNATIONAL CIGARETTE MACHINE COMPANY, OF SAME PLACE.

CIGARETTE-MACHINE.

SPECIFICATION forming part of Letters Patent No. 475,341, dated May 24, 1892.

Application filed October 6, 1891. Serial No. 407,897. (No model.)

To all whom it may concern:

Be it known that I, JAMES BAKER POLLARD, a citizen of the United States, residing in the city and county of Roanoke, in the State of Virginia, have invented certain new and useful Improvements in Cigarette-Machines, of which the following is a specification.

My invention relates to what is known as the "continuous-filler" class of cigarette-machines. Its objects are to supply the loose shredded tobacco in even, regulated, uniform quantities to mechanism which automatically forms it into a continuous filler-rod of uniform dimensions; to feed this rod to a device, during its passage through which it is enveloped by a paper wrapper, the edges of which are pasted together, and finally to cut the continuous cigarette thus produced into cigarettes of proper length. These ends I attain by certain novel combinations, constructions, and organizations of instrumentalities hereinafter described, and particularly specified in the claims at the end of this specification.

In order to carry out the objects of my invention in the best way now known to me, tobacco in the usual loose shredded condition is placed by hand in proper quantities on an endless feed-apron, which in co-operation with an endless band passing over other rollers gradually delivers it to a series of combing or drawing rollers by which the tobacco fibers are arranged in proper order and deposited in a hopper, whence they descend upon an endless feed-belt, which carries them between an overhead pressing-belt and the edges or peripheries of annularly-grooved wheels or rolls, which compress them into a cylindrical rod of proper dimensions. Thence the rod proceeds through a longitudinally-slotted tube traversed by an endless belt carrying a paper strip, the edges of which are caused by guides in the tube to wrap or envelop the filler-rod, the overlapping edge of the paper being, during the operation, gummed or pasted and pressed upon the other. The continuous cigarette then passes through a cutter-frame traversing the line of discharge of the cigarette at about the same speed as the cigarette and carrying a knife working transversely thereto to cut cigarettes of proper lengths therefrom at proper intervals.

The accompanying drawings show so much

mechanism embodying the improvements herein claimed as is necessary to illustrate my invention. Some of said improvements may, however, be used without the others and in machines differing somewhat in their details of construction from those herein shown.

Unless otherwise indicated, the parts are of usual approved construction.

The feed end of the machine I term the "front," and the discharge end the "rear." That side of the machine on the right of one adjacent to and facing the front I term the "right," and the opposite side the "left."

Figure 1 is a plan view; Fig. 2, a left side view in elevation; Fig. 3, a front end view in elevation; Fig. 4, a vertical cross-sectional view on the line 4 4, looking backward, showing the cutting device; Fig. 5, a vertical longitudinal sectional view through the same on the line 5 5 of Fig. 1, looking to the left; Fig. 6, a detail view of the paper carrying or wrapping belt and its hand ratchet-actuating mechanism; Fig. 7, a vertical cross-sectional view through the feed-rolls on the line 7 7, looking backward; Fig. 8, a sectional view of the mechanism for adjusting the side plates of the feed-apron; Fig. 9, a similar detail of one of the toothed combing-rolls, and Fig. 10 an illustration of the spiral arrangement of the teeth thereon; Fig. 11, a vertical central sectional view through the gumming or pasting apparatus; Fig. 12, a view of the bottom of the paste-pot, and Fig. 13 a detail view of the pasting-wheels; Fig. 14, a perspective view of the wrapping devices; Fig. 15, a sectional plan view thereof; Fig. 16, a vertical central longitudinal sectional view through the forward portion thereof; Figs. 17 to 23, both inclusive, respectively represent cross-sectional views therethrough on the correspondingly-marked lines of Fig. 14, all looking backward and showing its configuration. Figs. 24 and 25 show details of the adjustable clamp or holder which carries the paper folding or wrapping devices. Fig. 26 is a detail view of the pressing-belt and filler-forming wheels.

Short unfeathered darts indicate the direction in which the sections are shown, and feathered arrows the direction of movement of certain parts of the mechanism.

The salient features of the machine will

first be described successively from the feed to the discharge end, then the actuating mechanisms, and finally the operation of the whole machine.

5 The mechanism is shown as mounted on a main frame A, from the front right-hand end of which the feed-supporting frame A' extends. A feed-apron B is carried by rollers $b\ b'$, mounted on these frames. Vertical side
10 boards or plates B' lie close to the edges of this apron and the ends of these rollers, so as to prevent waste of tobacco. A smooth-faced driving-roll B² of comparatively large diameter turns in the frame above the inner carry-
15 ing-roller b' , and similar rolls B³ of smaller diameter are arranged opposite its ends. A toothed combing-roll B⁴ turns in bearing just below the end of the feed-apron and similar rolls B⁵ B⁶ are arranged below it. Small
20 smooth-faced rolls B⁷ run close to the roller B⁵. Small smooth rollers $b^5\ b^6$ between the rolls B³ B⁷ and the toothed rolls revolve by friction and prevent the tobacco from being
25 pulled out too rapidly and insure its even delivery. An endless band b^3 , passing over the rolls B², B³, and b^5 , and driven by the former roll B², runs close to the feed-apron, and the
30 tobacco as it is delivered from the feed-apron B passes between the end of the feed-apron and the endless band b^3 . The tobacco is consequently compressed between the apron and
35 band, both of which run at the same speed, and the tobacco is fed forward properly to the upper combing-roll B⁴. This apron and band constitute what I hereinafter call a "retarding device."

A casing A², terminating in a hopper A³, incloses the combing-rolls on their right and
40 left sides below the feed-apron. The front and rear end walls of this casing consist of end plates A⁴, pressed closely against the ends of the combing-rolls B⁴ B⁵ B⁶ by set-
45 screws a' , so as to prevent tobacco passing out at the ends of the rollers. A curved and downwardly-inclined plate or board a^3 , extending across the casing A² just below the upper
50 combing-roll B⁴, deflects the tobacco forward upon the second combing-roll B⁵ and prevents its escape between these rolls. A breast, concave, or hood a^2 , constituting part of the cas-
55 ing, curves around the upper toothed combing-roll B⁴ a short distance therefrom, and a similar concave a^4 , constituting part of the hopper, curves around the lower combing-roll
60 B⁶ in close proximity thereto, for a purpose hereinafter explained. The inner carrying-roller b' and all the toothed rolls B⁴ B⁵ B⁶ turn in the same direction. (See Fig. 7.)

Fig. 9 shows the preferred form or con-
60 struction of the teeth b^4 and the way they are inserted in the rolls, and Fig. 10 their spiral arrangement on the face of the rolls, one line only being shown, however, for the sake of
65 clearness of illustration. The teeth are preferably staple-shaped and inserted in the rolls in parallel spiral lines with their upper or active edges inclined upward and backward,

so as not to pull or tear the fibers, but allow them to ride over these edges. The result of the organization and operation of these belts, 70
concaves, and rolls is to comb out and deposit the shredded tobacco fibers on the filler-carrying belt in a finely-divided or flocculent condition, well adapted for its intended use.

An endless filler-carrying belt C, preferably 75
of metal or rubber, carried by pulleys C' C², runs lengthwise under the hopper close to the lower edges thereof from the front of the machine rearward a short distance and carries the tobacco through an opening a in the rear 80
wall of the hopper. Two horizontal filler-forming wheels D D' revolve in the same horizontal plane in close contact with the upper surface of this filler-carrying belt and in the same direction on their proximate sides. The 85
filler-forming wheels are so mounted that their peripheries are close together, and semicircular annular grooves are formed in the peripheries, which together form an opening between the walls for the passage of the filler as it is 90
being formed into a continuous filler or filler-rod. One of the wheels D is provided with a peripheral flange d^x , which projects over the rim of the other wheel D' to hold the filler down while it is being fed forward. A pressing- 95
belt D⁴, preferably of leather or rubber, is carried by rollers $d^4\ d^5$, which turn in bearings on the frame, which bearings, preferably, are made adjustable. The belt D⁴ extends from the discharge-opening a in the hopper to the 100
contiguous portions of the filler-forming wheels and terminates at or near them. The organization is such that this belt overlies the filler-carrying belt parallel with it at about the level of the top of the compressing-wheels 105
and presses the filler vertically just before it passes between their grooved edges to form the rod. The rear roller d^5 of this pressing-belt is driven by frictional contact with one of the filler-forming wheels D D'. (See Fig. 26.) 110

A paper folding or wrapping tube E is arranged longitudinally in the plane of the filler-rod, or, in other words, in the path traversed by it, with its front end just in rear of the axles of the filler-forming wheels D D' or of 115
the point at which they form the filler-rod.

A bridge H, which consists of a flat plate provided with a downwardly-projecting and rearwardly-inclined shoulder h , lies between the filler-forming wheels and the front of the tube 120
E, which is supported intermediately of its length by a universally-adjustable holder, the details of which are shown in Figs. 24 and 25 and will now be described.

A bracket F, fixed on the frame A, is pro- 125
vided with a vertically-elongated slot f in its upper end. A shouldered round rod or arm F' passes through this slot and is clamped at the desired elevation therein by a nut f' and washer f^x , Fig. 25. A vertically-split brack- 130
et-clamp F² fits on this rod, on which it can be turned or adjusted backward or forward and clamped in any desired position by a screw f^2 . A horizontally-split holding-tube

F^3 is inserted in a horizontal longitudinal opening in the holder or clamp F^2 and clamped therein by a set-screw f^3 . The wrapping-tube is inserted in this holding-tube and clamped therein by this set-screw. The wrapping-tube can thus be freely adjusted in all directions.

Figs. 14 to 23 show the details of construction of a wrapping-tube and wrapper-carrying belt substantially similar to those shown in E. T. Pollard's United States Letters Patent No. 302,521, of July 22, 1884, which may be employed in my improved machine; but as such construction forms no part of the subject-matter herein claimed and may be varied in many ways it is not necessary to describe it here.

The wrapper-carrying belt G passes over a wheel G' of comparatively large diameter in rear of the wrapping-tube and a small roller g in the curve of its forward end. Both this belt and the wrapper are kept taut by a tension-roller g' . (Shown in dotted lines in Fig. 2.) The wrapping-belt traverses the guide g^2 and front roller g underneath and outside the wrapping-tube, which it enters through the opening e^3 in the bottom of said tube in advance of the front end of the hood or tongue E^3 , and thence passes out of the rear end of the tube and conforming to its outlines or guide contours. (See Figs. 16 to 23.) A ratchet-lever G^3 , Figs. 1 and 6, connected with the shaft G^2 of the wrapping-belt-carrying wheel G' , enables it and the wrapper to be moved by hand when desired. The wrapper x passes upward from its reel X over the tension-roller g' , where it comes in contact with the wrapping-belt, and thence it passes over the front roller g with the belt. The belt and wrapper pass backward together through the tube E .

In a paste-pot I , mounted on the frame, is a piston or plunger disk I' on a screw I^2 , adapted to be turned in either direction by a crank i or to be automatically actuated intermittently at proper intervals by a ratchet I^3 and pawl mechanism hereinafter described. The paste is fed through the open bottom of the pot upon the periphery of a vertically-arranged paste-receiving wheel J , having an annular groove in its periphery and rotating in contact with the edge of a horizontally-arranged paste-applying wheel J' , which applies it in the proper manner and at the proper time to the inner surface of the right-hand edge of the wrapper as it passes through the guide-tube.

A tubular supporting device K , through which the completed continuous cigarette passes after leaving the wrapping-tube, is shown as divided transversely into two sections $K' K^3$, mounted in the same axial line in brackets $l l'$ on the cutter-carrying frame L . The front section K of the holder has a flaring mouth k to facilitate the entrance of the continuous cigarette and is screwed into its supporting-bracket l . The rear portion K^2 of this section has a flanged rear head k' and is adjustable lengthwise in its socket

relatively to the cutter, and can be fixed in the desired position by a pinch-screw k^2 , Fig. 5. The rear section K^3 also has a similar flanged head k^4 next the cutter and is adapted to slide lengthwise in its bearings, being pressed against the knife by a spring k^3 , so as always to work close thereto. The flanges $k' k^4$ in fact constitute fixed supports or cutting-edges, close to which the knife works.

The cutter-frame L is connected by pivots $l^2 l^3$ to the upper ends of parallel levers or radius-bars $L' L^2$, rocking at bottom on pivots $l^4 l^5$ on the main frame and vibrated by a cam L^3 .

A sector-shaped knife or cutter M is carried by an arm M' , rocking on an intermediate shaft M^2 on the cutter-frame and vibrated by a cam or eccentric M^3 , acting on its projecting heel m' , carrying a friction-roller m^2 . This cam is a single-acting one, the knife being retracted by a spiral spring m^5 . The cutter traverses across the path of the continuous cigarette between its tubular supporting sections $K' K^3$, thus cutting it into proper lengths. The knife-shaft M^2 rocks in pivot-bearings in adjusting-screws m^3 , and the knife can be clamped in any desired position on its shaft by a set-screw m^4 . This organization enables it to be readily removed, replaced, and adjusted. The knife and its supporting-sections, being both mounted in the same frame, move coincidentally with the continuous cigarette on the back-stroke when the cutting is done, and consequently a clean sharp cut is made.

A horizontal longitudinal driving-shaft N on the left side of the frame A carries on its front end a wheel or pulley N' , driven by a belt or gearing from any suitable prime mover. A belt O' encircles a pulley O on the driving-shaft and a corresponding pulley O^2 on the axle of the lowest combing-roll B^6 . A belt o' encircles a pulley o on this shaft and a corresponding pulley o^2 on the axle of the upper combing-roll B^4 .

A spur-gear p , near the center of the driving-shaft N , actuates a corresponding gear-wheel P of much larger diameter on a horizontal longitudinal counter-shaft P' , overlying the driving-shaft. A bevel-pinion p' on the front end of this shaft engages a corresponding bevel-wheel Q of much larger diameter on a horizontal cross-shaft Q' , projecting beyond the frame A at both ends and carrying bevel-gears $q q'$. The rear band-carrying wheel C' is fixed on and driven by this shaft. These gears drive corresponding bevel-pinions $d d'$ on the upright shafts $D^2 D^3$ of the filler-forming wheels $D D'$, one of which drives the upper pressing-belt by frictional contact, as before explained.

A bevel-gear r on the top of the right-hand shaft D^3 meshes with a corresponding gear r' on the outer end of a horizontal shaft R , the inner end of which carries a bevel-pinion r^2 , meshing with a corresponding one r^3 on the rear end of the axle of the intermediate comb-

ing-roll B^5 . A spur-wheel R' on this axle drives an idle-gear R^2 on the auxiliary frame A' , which gear in turn drives a spur-gear R^3 on the axle of the inner roller b' of the filler-carrying belt. This organization causes the inner carrying-roller b' and combing-rolls B^4 B^5 B^6 all to rotate in the same direction and at proper relative speeds. A spur-gear R^4 on the axle of the roller b' drives a corresponding gear r^4 on the axle of the roll B^2 , which carries and drives the band b^3 .

A bevel-pinion s on the counter-shaft P' drives a large bevel-wheel S on a cross-shaft G^2 , on which the wrapping-belt pulley G' is fixed and by which it is actuated. A ratchet-lever G^3 serves to turn this wheel and the wrapping-belt by hand when needed.

A bevel-gear t on the counter-shaft P' actuates a corresponding gear t' on an upright shaft T , carrying a crank-wheel T' on its upper end. A crank-pin t^2 , adjustable laterally relative to the axis of this shaft, is connected by a pitman T^2 with an arm t^3 , carrying a pawl engaging with a ratchet-wheel I^3 , fast on the actuating-screw I^2 of the paste-piston I' , thus imparting to it an intermittent or step-by-step feed movement.

A bevel-gear j on the shaft T drives a corresponding pinion j' on the shaft J^2 of the paste-receiving wheel J , the periphery of which receives the paste forced out of the pot I , and is made concave to conform to the periphery of the paste-applying wheel J' , which turns on an upright shaft J^3 , on which it can be vertically adjusted by a screw j^2 thereon. This shaft turns in brackets j^3 , capable of swinging horizontally around an upright post U and of being clamped thereon by a set-screw u' to control the relation of the paste-applying wheel J' to the wrapper and paste-receiving wheel J . A belt U^2 passes over a pulley U' on the shaft of the roll B^6 and over two pulleys u^2 u^3 , running loosely on the upright shaft D^2 and over a smaller pulley u^4 on a larger pulley U^3 on the post U . A belt u^5 on the pulley U^3 drives another pulley on the shaft J^3 of the paste-applying wheel J' , which can thus be adjusted without interference with its driving connections.

A large spur-wheel V on the rear end of the driving-shaft N actuates a corresponding gear V' on a horizontal longitudinal short shaft v , which carries the cams or eccentrics for actuating the knife and its frame. The longitudinal reciprocation of the knife or cutter-frame is effected by a cam L^3 , provided with a cam-groove w , adapted to produce the requisite range of movement, which cam-groove engages with a pin or roller w' on an arm W , pendent from the cutter-frame L .

The transverse traverse or cutting movement proper of the knife in one direction is produced by the contact of an eccentric M^3 on the shaft v with the friction-roller m^2 on the end of the knife-arm M' , which rocks on its shaft M^2 , the return movement being effected by a spring, as hereinbefore explained.

The following is a description of the operation of the machine: The feeder standing in front of the apron B distributes the prepared shredded tobacco evenly thereon and it is carried between it and the band b^3 . The roll B^2 drives this band by friction, while the smaller rolls B^3 b^5 turn loosely on their axles inside the band by friction, and serve to keep the tobacco in good shape without clogging. The rolls B^7 also turn loosely on their axles. The tobacco after passing between the apron B and band b^3 is combed or drawn out by the more rapidly-moving toothed roll B^4 . A sufficient space is left between the roll B^4 and the concave a^2 to allow the tobacco to descend. The tobacco also passes between roll B^5 and the lower smooth rolls B^7 b^6 . The space between the roll B^5 and the rolls B^7 b^6 is smaller than that between the casing and upper combing-roll B^4 and the lower roll has thus a better chance to draw out and assort the fibers properly. The lowermost combing-roll B^6 runs close to the intermediate one B^5 and in the same direction, as shown by the arrows in Fig. 7, and to the concave a^4 of the hopper, and thus strips the fibers from the roll B^5 , draws or combs them out still more and deposits them in the bottom of the hopper. The filler-carrying belt C runs close to this bottom; but an opening a in its rear end enables the desired quantity of filling to be drawn out upon the belt, which carries it underneath the pressing-belt D^4 and between the annularly-grooved filler-forming wheels D D' , from which it issues in the form of a continuous cylindrical rod of the proper diameter and passes over the bridge H directly into the front end of the wrapping-tube E , where it rests on the paper strip or wrapper.

The operation of the wrapping-belt and wrapping-tube being well known need not be explained.

The completed or continuous cigarette is carried from the wrapping-tube by the wrapping-belt over the large rear belt-wheel G' and thrust endwise into and through the tubular support K , which reciprocates to and fro in its line of travel. The machine is intended to produce about two hundred cigarettes per minute, and the various parts are speeded accordingly. The tubular support and cutter are intended, preferably, to move backward at the same speed as the continuous cigarette. Consequently they need only move forward to meet the incoming cigarette half the length of a cigarette, and then back at the same speed as the continuous cigarette, and it is during this coincident backward movement that the knife cuts the continuous cigarette by traversing its path transversely.

Having thus fully described the construction, organization, and operation of my improved cigarette-machine, what I claim therein as new and as of my own invention is—

1. The combination, substantially as hereinbefore set forth, in a cigarette-machine, of an endless apron which carries the tobacco, a

vertically-arranged endless band extending past the end of the apron and mounted to move in close proximity thereto to deliver the tobacco at a regulated speed, a combing-roll below the lower end of the endless band and below the end of the apron to draw the tobacco away from the apron and band, a concave between which and the combing-roll the tobacco passes, and gearing which drives the combing-roll faster than the band and apron to comb out and arrange the tobacco.

2. The combination, substantially as hereinbefore set forth, in a cigarette-machine, of a retarding device through which the tobacco passes at a regulated speed, a combing-roll which draws the tobacco away from the retarding device, a concave between which and the roll the tobacco passes, a second combing-roll upon which the tobacco is deposited from the first one, smooth rollers close to the second combing-roll, and gearing which drives both combing-rolls in the same direction and faster than the retarding device, so that the tobacco combed out by the first roll is still further drawn on in passing between the second combing-roll and its adjacent smooth rolls.

3. The combination, substantially as hereinbefore set forth, of a retarding device through which the tobacco passes at a regulated speed, a combing-roll which draws the tobacco away from the retarding device, a concave between which and the roll the tobacco passes, a second combing-roll upon which the tobacco is deposited from the first roll, smooth rollers close to the second combing-roll, a third combing-roll close to the second, a concave close to which it works to draw out and discharge the tobacco, and gearing actuating the moving parts of these devices.

4. The combination, substantially as hereinbefore set forth, of means for delivering the tobacco in regulated quantities, a combing-roll which receives the tobacco therefrom, smooth rolls between which and the combing-roll the tobacco is drawn, another combing-roll upon which the tobacco is delivered from the first, a concave close to which it turns and between which and it the tobacco is discharged, and gearing actuating the moving parts of these devices.

5. The combination, substantially as hereinbefore set forth, of a supporting-frame, combing-rolls turning in bearings therein, end plates adjustable to and from the ends of the rolls, and means for setting the plates close to the ends of the rolls.

6. The combination, substantially as hereinbefore set forth, of a supporting-frame, combing-rolls carried thereby, a casing inclosing the sides of the rolls, end plates adjustable lengthwise of the rolls, and set-screws interposed between the frame and end plates to set them close to the ends of the combing-rolls.

7. The combination, substantially as hereinbefore set forth, of an endless filler-carry-

ing belt, annularly-grooved horizontal filler-forming wheels revolving close together above the filler-carrying belt and in the same horizontal plane, and an endless pressing-belt leading to and terminating near the contiguous portions of the filler-forming wheels and working over the filler-carrying belt, for the purpose specified.

8. The combination, substantially as hereinbefore set forth, of annularly-grooved horizontal filler-forming wheels revolving in the same plane with their edges in contact, an endless pressing-belt leading to and terminating near the contiguous portions of the wheels, and means beneath the wheels for supporting and carrying the filler while passing beneath the pressing-belt and between the wheels to form a continuous cigarette-rod.

9. The combination, substantially as hereinbefore set forth, of an endless filler-carrying belt, an annularly-grooved filler-forming wheel revolving over this belt in a plane parallel therewith, another similarly-grooved wheel revolving in the same plane with its edge in contact with the former one, a flange on the upper wheel overlapping the other one to aid in forming the filler, a pressing-belt overhanging the carrying-belt and filler-forming wheels, and means for driving these parts.

10. The combination, substantially as hereinbefore set forth, of a feed-hopper having a discharge-opening in its rear wall, a filler-carrying belt traveling close to the open bottom of the hopper, horizontal filler-forming wheels revolving over the belt, a pressing-belt extending from the discharge-opening in the hopper to the contiguous portions of the filler-forming wheels and working above the filler-carrying belt, and means for driving the moving parts.

11. The combination, substantially as hereinbefore set forth, with the wrapping-tube of a cigarette-machine, of a holding device applied thereto intermediate of its length, said holding device comprising a clamp, means carried by the clamp for adjusting the wrapping-tube longitudinally, a bracket or support, and means for adjusting the clamp on its support laterally relatively to the wrapping-tube.

12. The combination, in a cigarette-machine, of a supporting-bracket, an arm mounted thereon, means whereby said arm may be adjusted vertically on the bracket, a clamp adapted both to slide and to swing on the arm, a holder carried by the clamp, a wrapping-tube carried thereby, and means for securing the wrapping-tube in the holder, as set forth.

13. The combination, substantially as hereinbefore set forth, of a vertically-slotted supporting-bracket F, an arm F' held therein, a clamp F², adapted both to slide and to swing thereon, a split holder F³, carried by the clamp, a wrapping-tube carried thereby, and a securing-screw f³, which holds the tube in its adjusted position.

14. The combination, substantially as here-

inbefore set forth, of an endless filler-carrying belt, annularly-grooved horizontal filler-forming wheels revolving thereover in the same plane, a wrapping-tube in rear of these
5 wheels, and an endless wrapping-belt traveling through this tube, to which the filler-rod is fed by the wheels, as described.

15. The combination, substantially as here-
inbefore set forth, of an endless horizontal
10 filler-carrying belt, filler-forming wheels revolving over it, an endless pressing-belt over the filler-belt and terminating near the contiguous portions of the filler-forming wheels, a wrapping-tube in rear of the wheels, and
15 an endless wrapping-belt traveling through this tube, as described.

16. The combination, substantially as here-
inbefore set forth, of a paste-reservoir, its piston, its actuating-screw, its ratchet-feed, an upright paste-receiving wheel having an
20 annular groove in its edge or periphery which traverses the outlet of the paste-reservoir, and a paste-applying roller or wheel revolving with its edge in contact with said grooved periphery of the paste-receiving wheel, for
25 the purpose described.

In testimony whereof I have hereunto subscribed my name.

JAMES BAKER POLLARD.

Witnesses:

T. F. BARKSDALE,
WM. SANDERS.