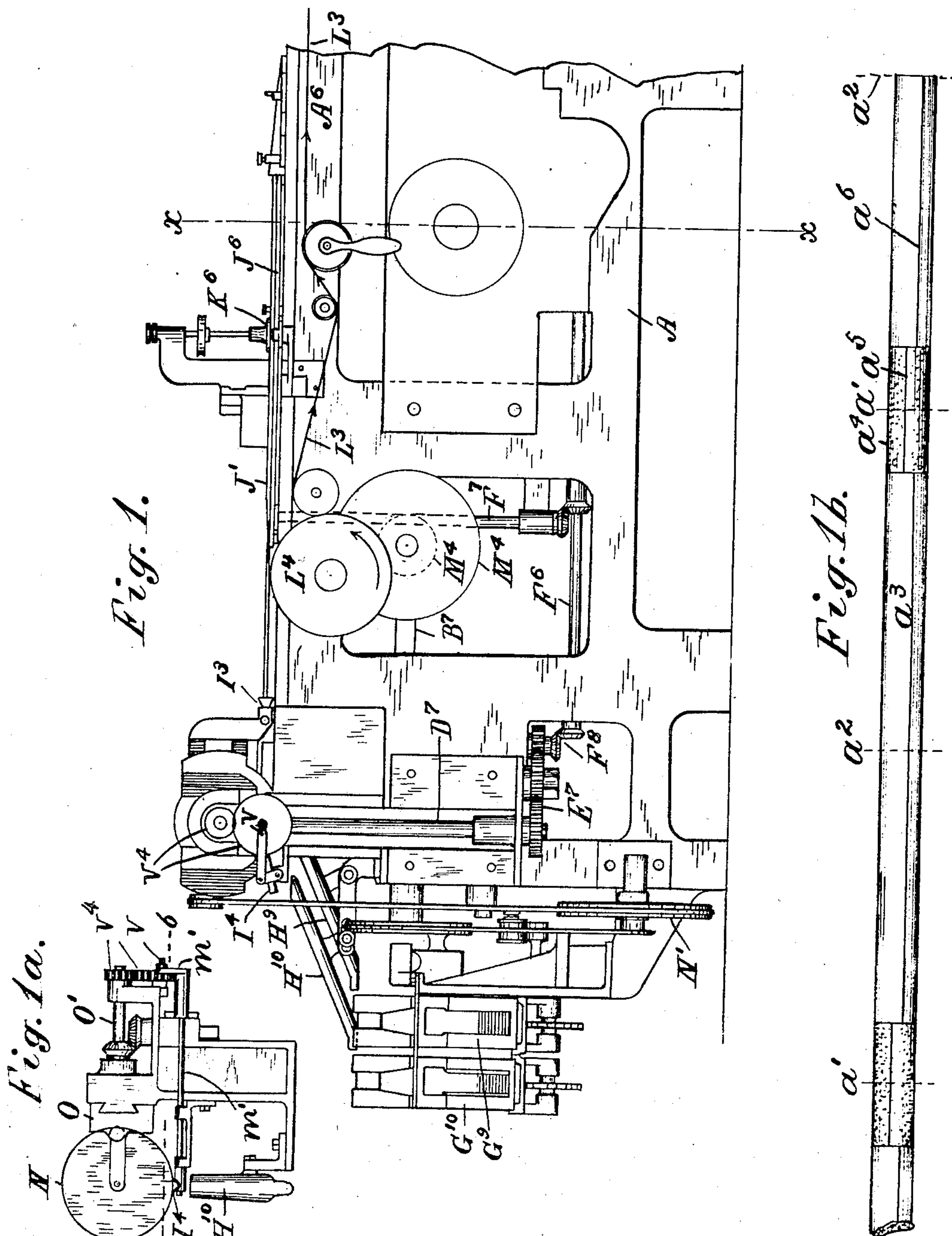


F. E. LUDINGTON.
CONTINUOUS CIGARETTE MACHINE WITH TIPPING ATTACHMENT.
APPLICATION FILED OCT. 30, 1909.

983,299.

Patented Feb. 7, 1911.

9 SHEETS-SHEET 1.



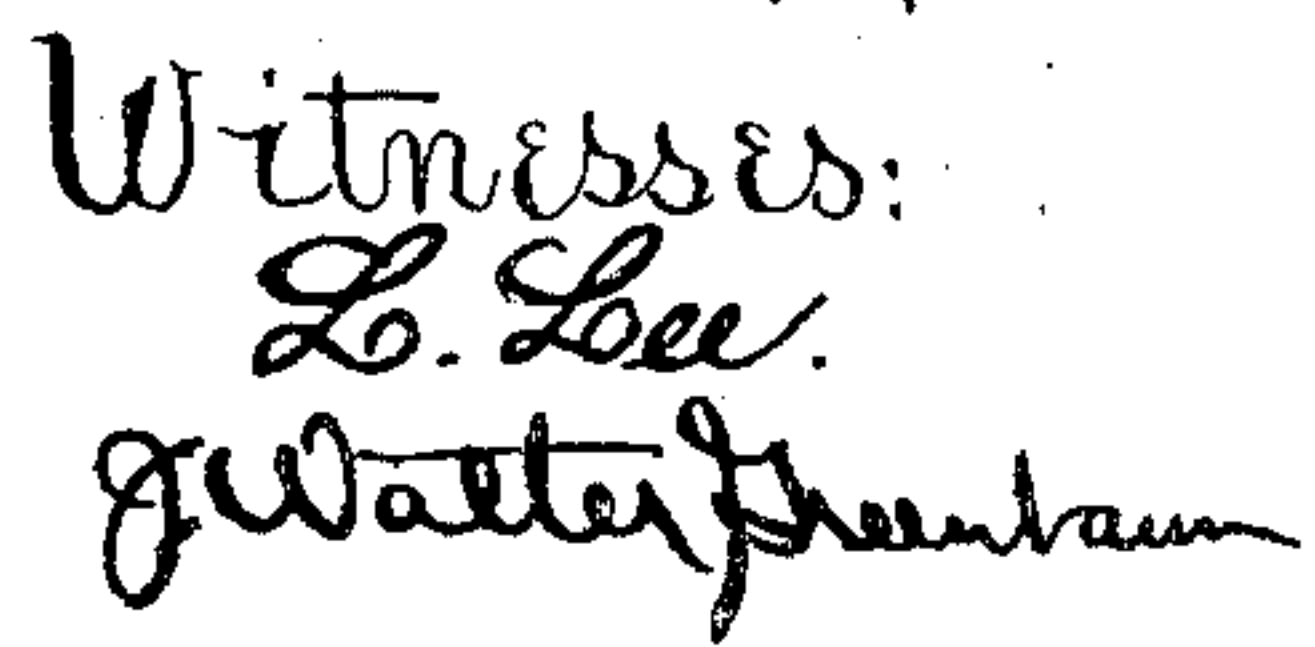
Witnesses:
L. Lee.
Walter Greenbaum.

Inventor
Frank E. Ludington, per
Thomas S. Crane, atty.

983,299.

Patented Feb. 7, 1911.

9 SHEETS—SHEET 2.



Inventor
Frank E. Ludington
per Thomas S. Crane, Atty.

F. E. LUDINGTON.
CONTINUOUS CIGARETTE MACHINE WITH TIPPING ATTACHMENT.

APPLICATION FILED OCT. 30, 1909.

Patented Feb. 7, 1911.

9 SHEETS—SHEET 3.

983,299.

Fig. 3a.

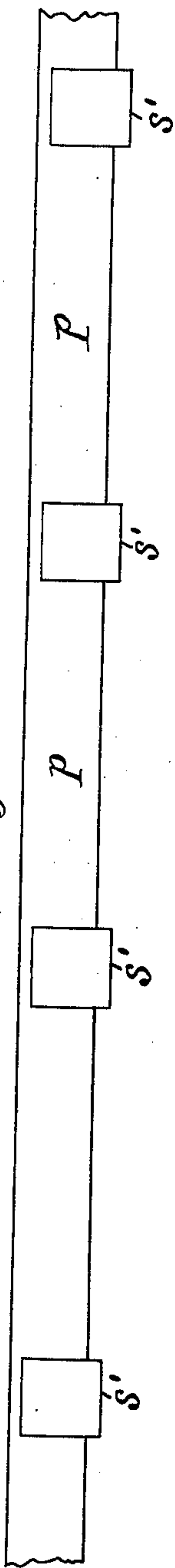
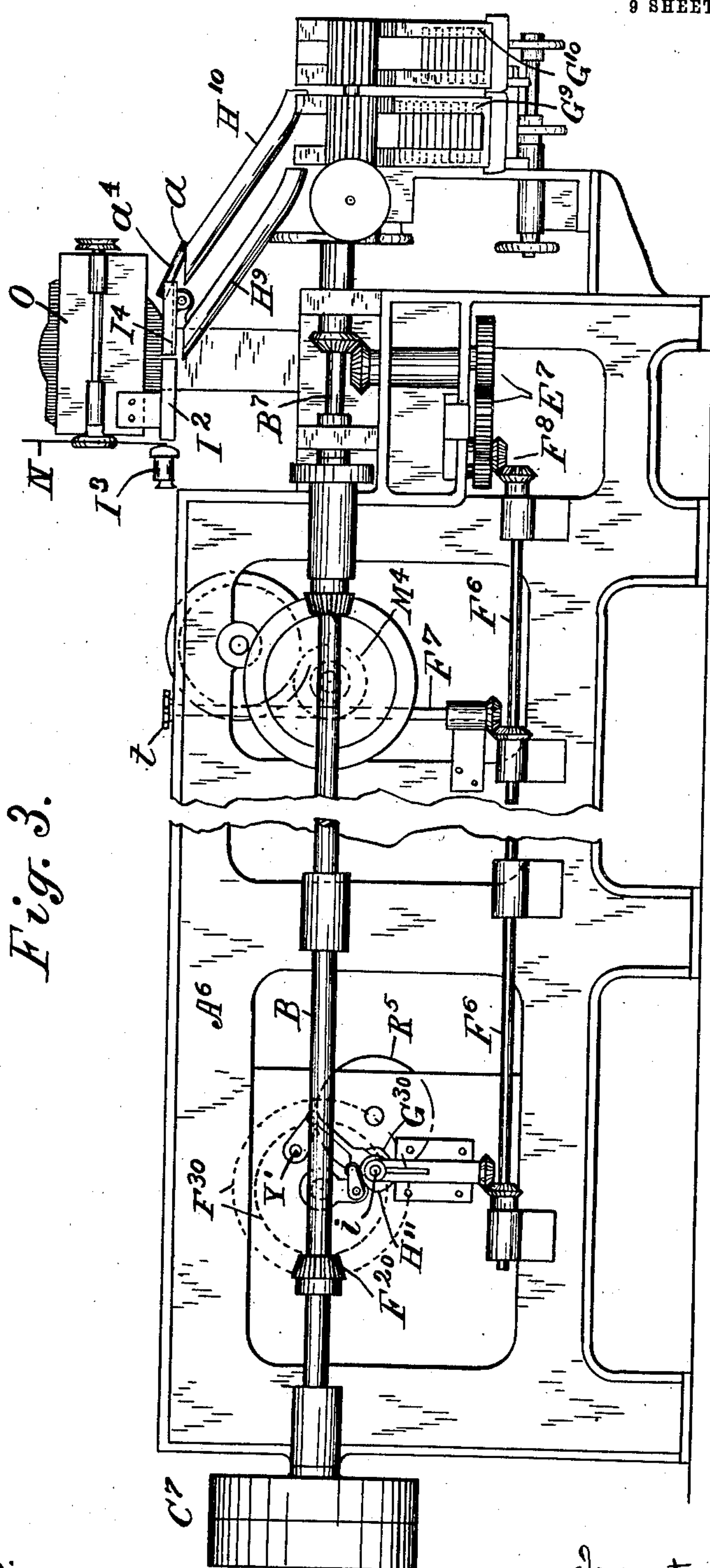


Fig. 3.



Witnesses:
L. Lee.
J. Walter Guenther.

Inventor
Frank E. Ludington, per
Thomas S. Crane, Atty.

F. E. LUDINGTON.
CONTINUOUS CIGARETTE MACHINE WITH TIPPING ATTACHMENT.

983,299.

APPLICATION FILED OCT. 30, 1909.

Patented Feb. 7, 1911.

9 SHEETS—SHEET 4.

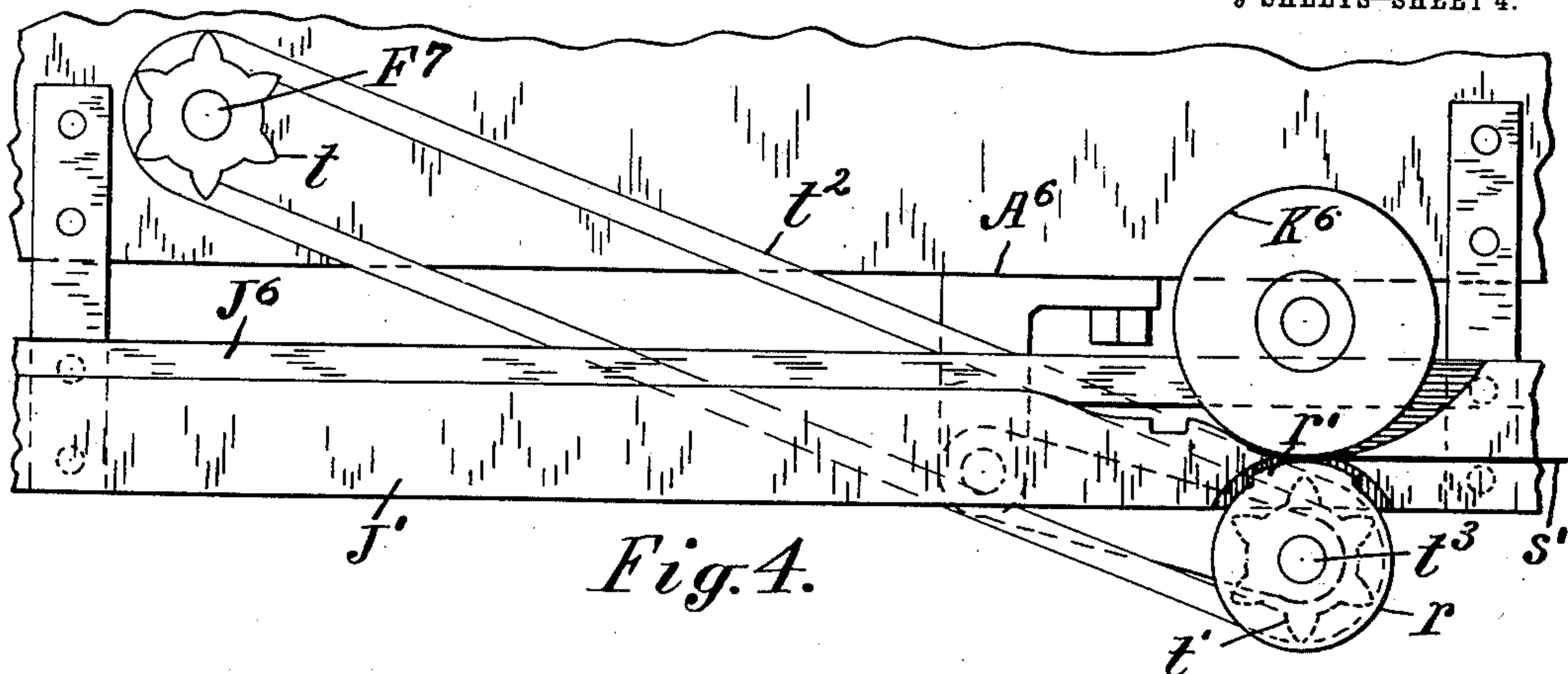


Fig. 4.

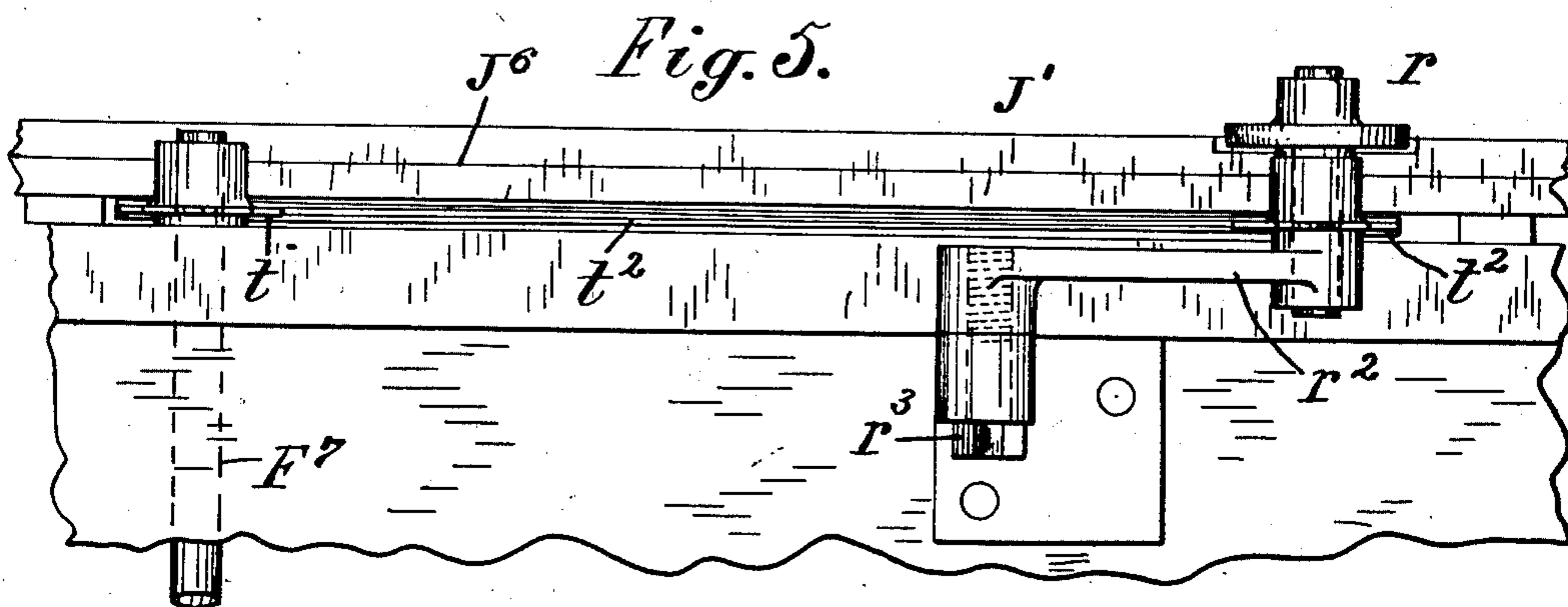


Fig. 5.

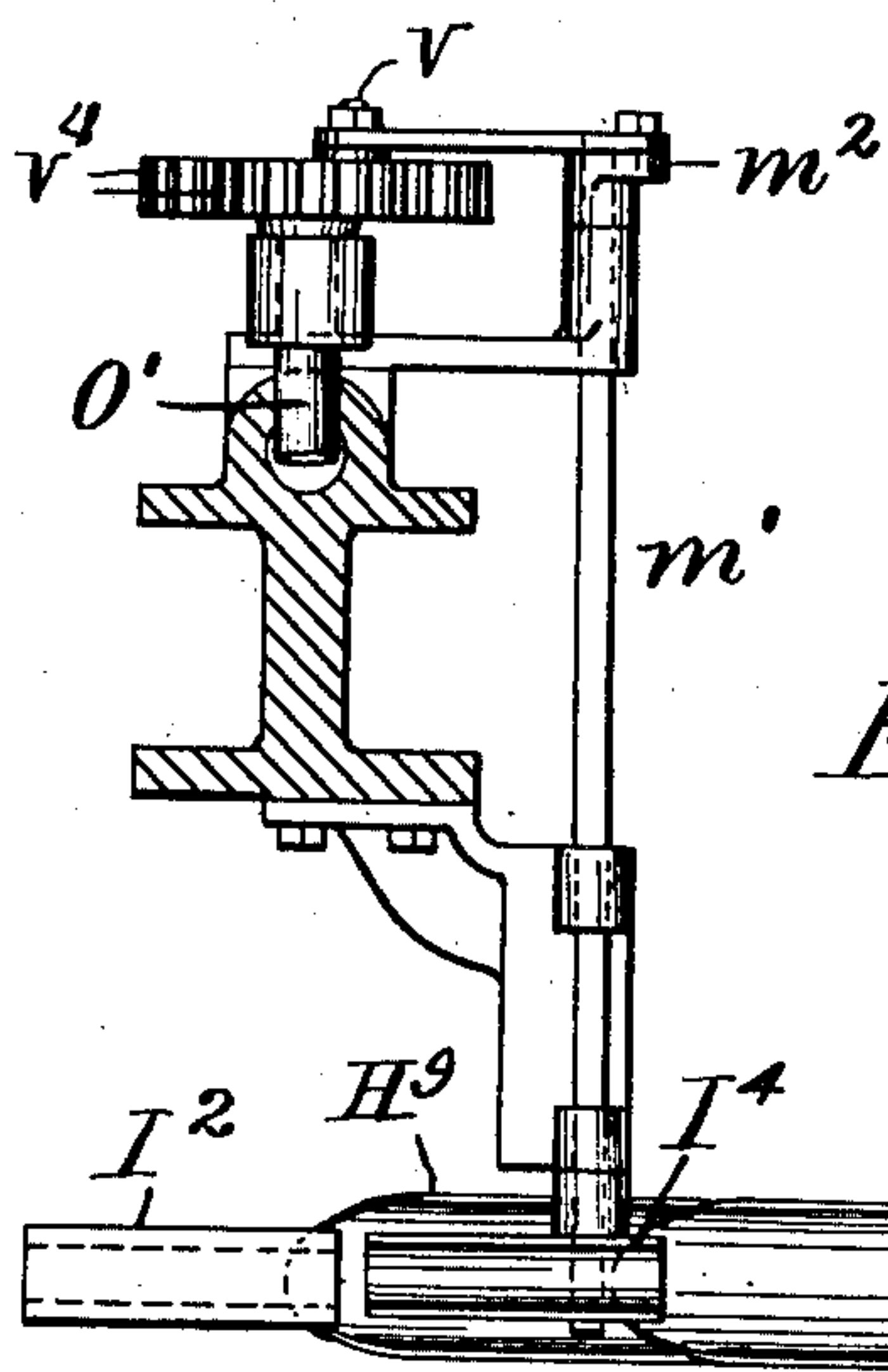


Fig. 6.

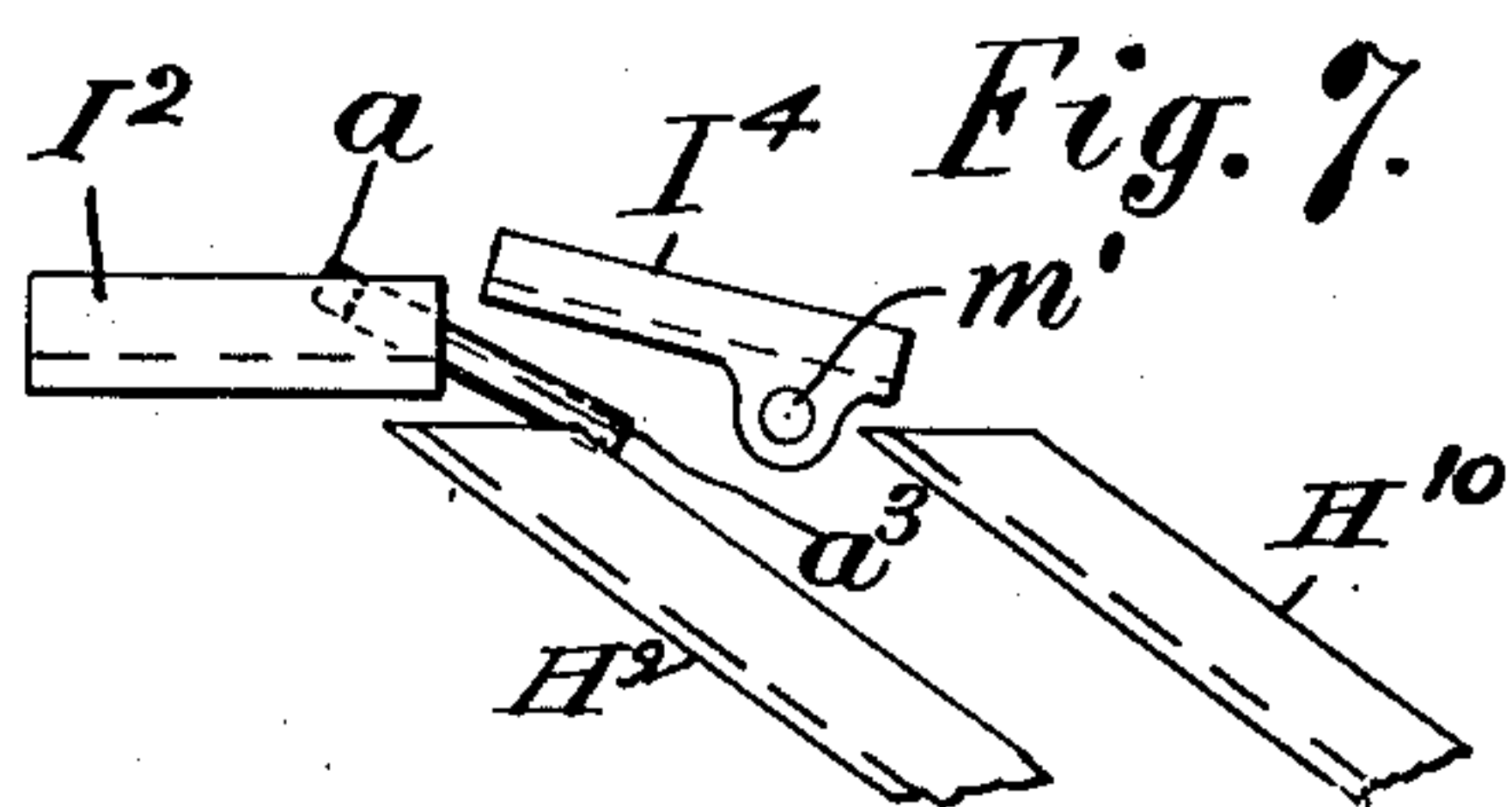
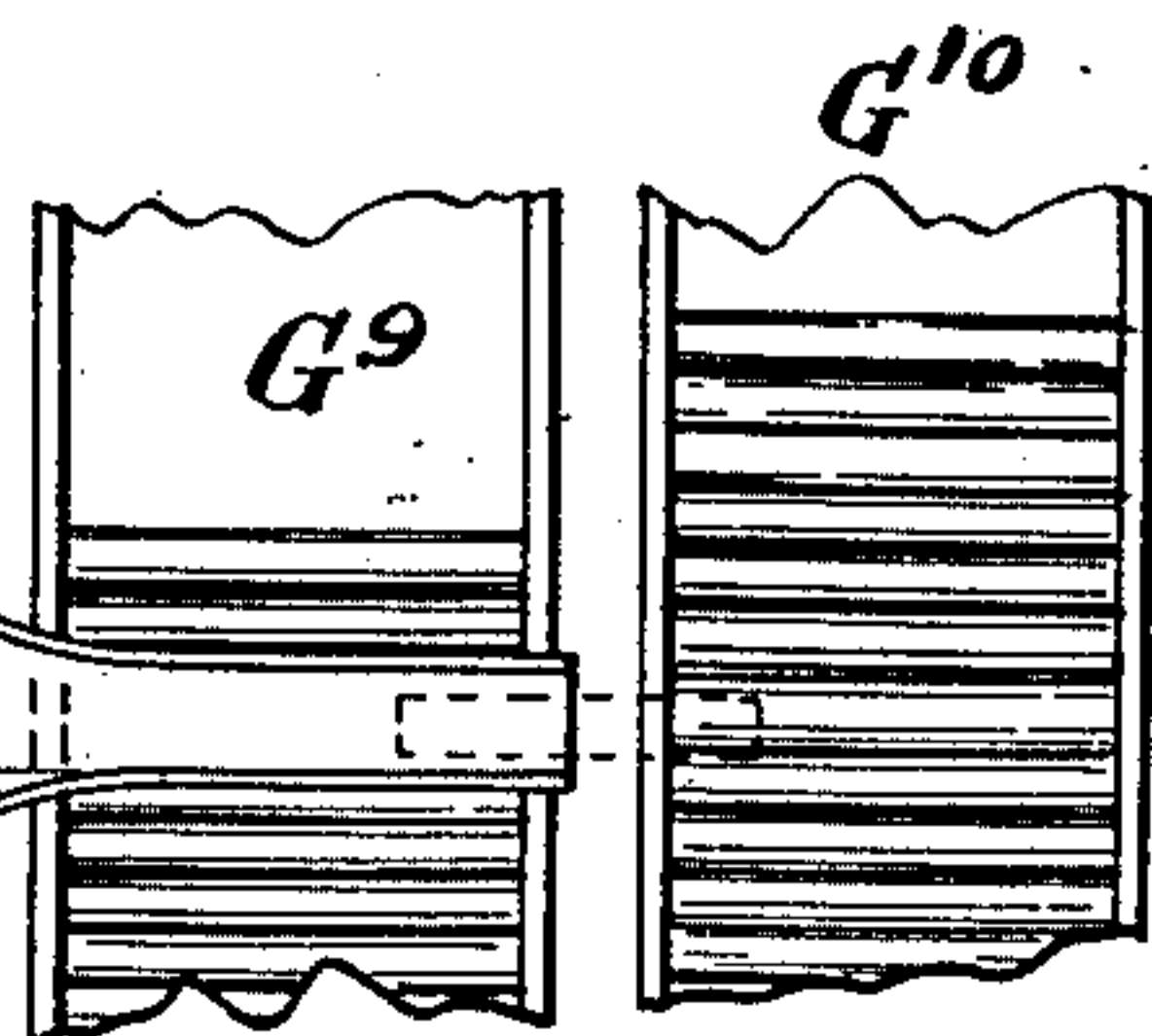


Fig. 7.



Witnesses:
Lo. Lee.
J. Walter Greenbaum.

Inventor
Frank E. Ludington, per
Thomas S. Crane, Atty.

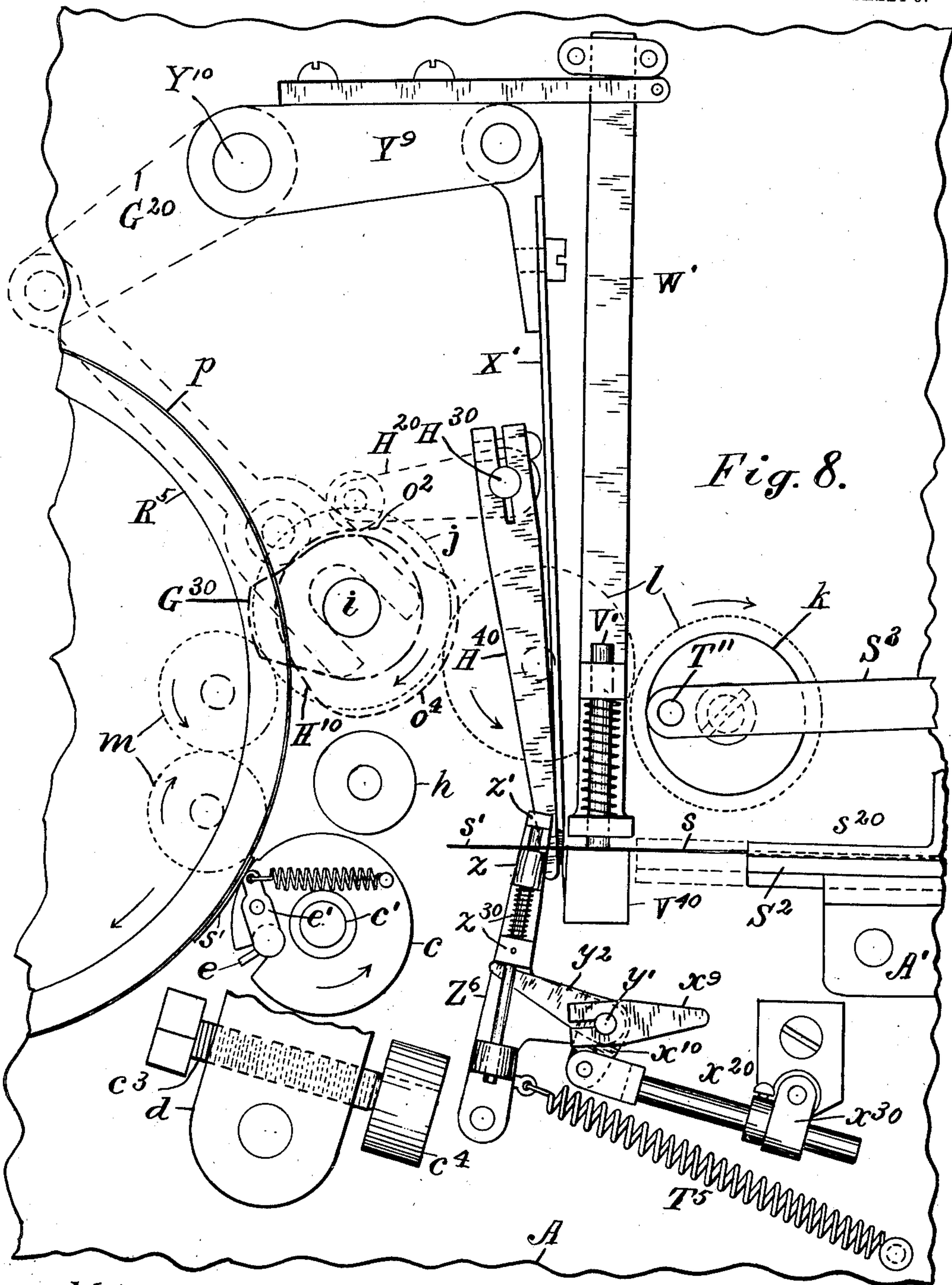
F. E. LUDINGTON.
CONTINUOUS CIGARETTE MACHINE WITH TIPPING ATTACHMENT.

983,299.

APPLICATION FILED OCT. 30, 1909.

Patented Feb. 7, 1911.

9 SHEETS—SHEET 5.



Witnesses:
L. Lee.
J. Walter Duenbaum

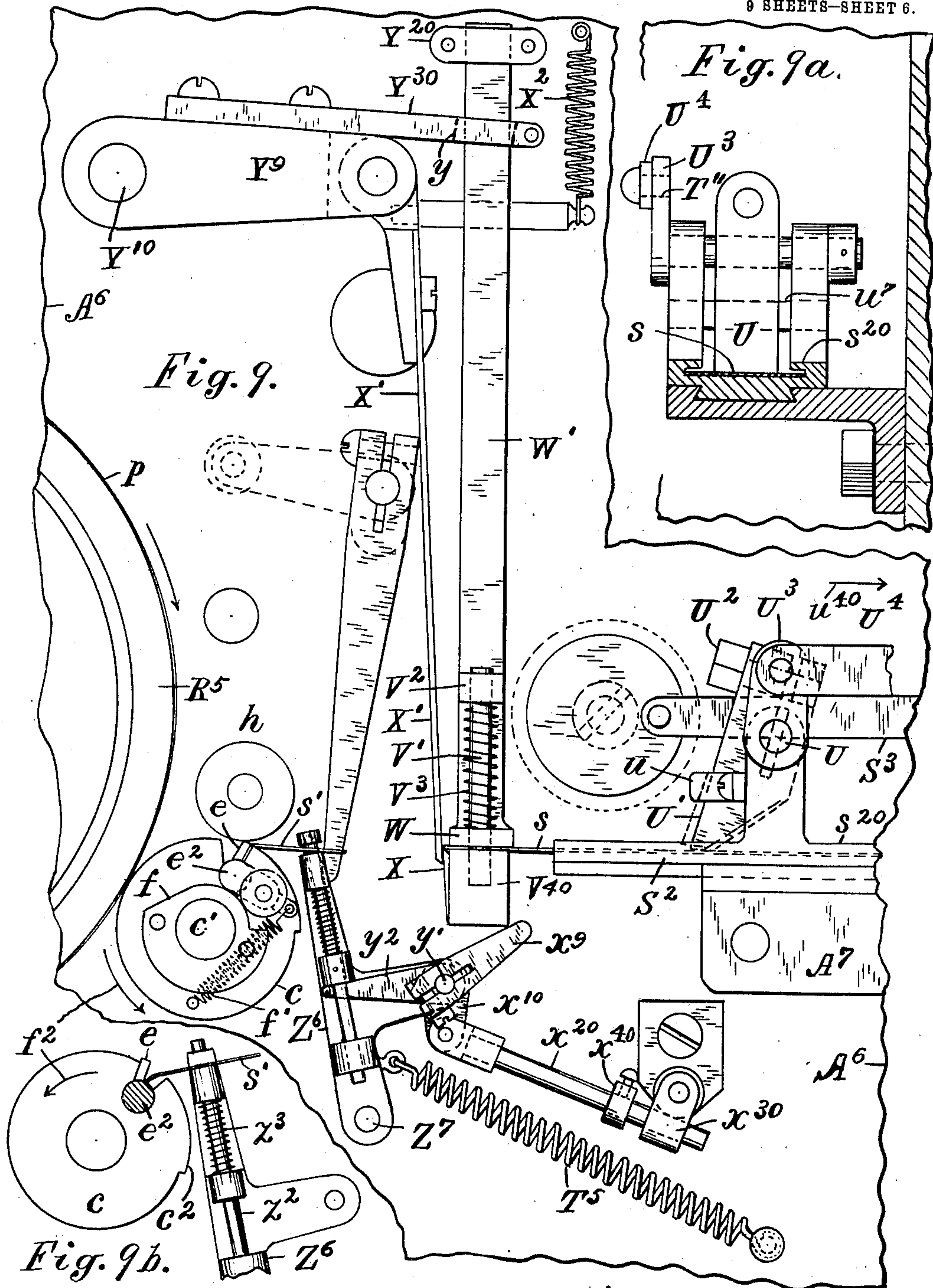
Inventor
Frank E. Ludington
per Thomas S. Crane, atty.

F. E. LUDINGTON.
CONTINUOUS CIGARETTE MACHINE WITH TIPPING ATTACHMENT.
APPLICATION FILED OCT. 30, 1909.

983,299.

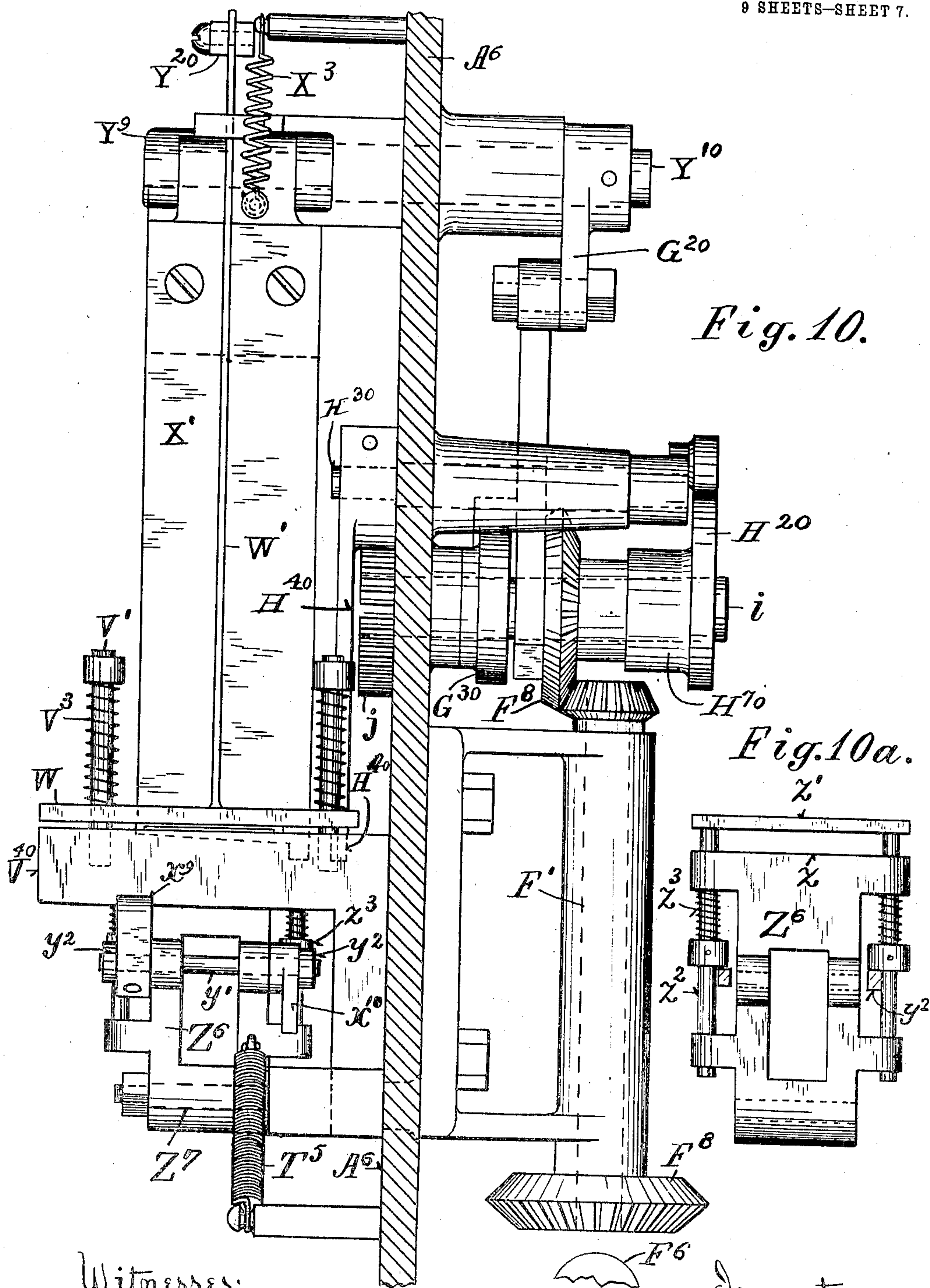
Patented Feb. 7, 1911.

9 SHEETS—SHEET 6.



Witnesses:
L. Lee.
J. Walter Drenth.

Inventor
Frank E. Ludington, per
Thomas S. Crane, Atty



Witnesses:
 L. Lee.
 J. Walter Greenbaum

Inventor
 Frank E. Ludington,
 per Thomas S. Crane, atty.

F. E. LUDINGTON.
CONTINUOUS CIGARETTE MACHINE WITH TIPPING ATTACHMENT.
APPLICATION FILED OCT. 30, 1909.

983,299.

Patented Feb. 7, 1911.

9 SHEETS—SHEET 8.

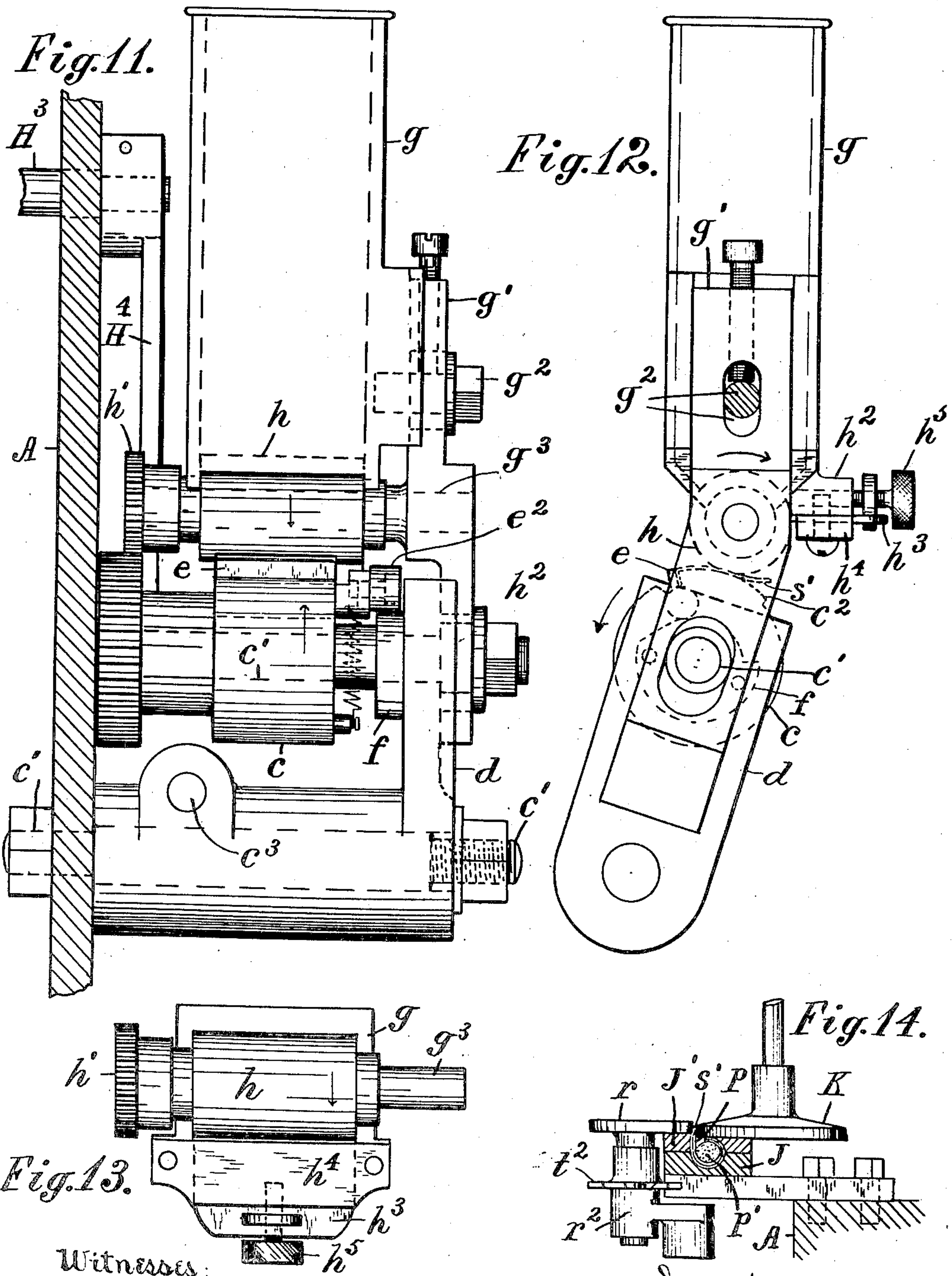


Fig. 13.

Fig. 14.

Witnesses:

L. Lee.
J. A. [Signature]

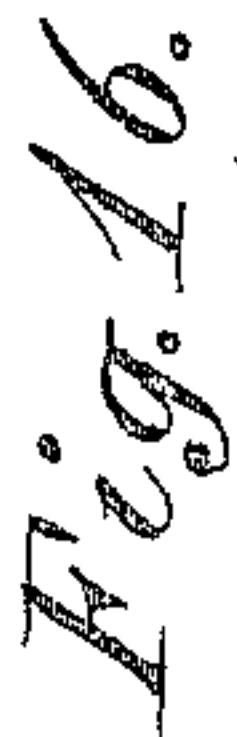
Inventor

Frank E. Ludington, per
Thomas J. Crane, Atty.

983,299.

APPLICATION FILED OCT. 30, 1909.

9 SHEETS—SHEET 9.



Witnesses:
L. Lee
J. Walter Greenbaum

Inventor
Frank C. Ludington, per
Thomas S. Crane, Atty.

UNITED STATES PATENT OFFICE.

FRANK E. LUDINGTON, OF WATERBURY, CONNECTICUT.

CONTINUOUS CIGARETTE-MACHINE WITH TIPPING ATTACHMENT.

983,299.

Specification of Letters Patent.

Patented Feb. 7, 1911.

Application filed October 30, 1909. Serial No. 525,423.

To all whom it may concern:

Be it known that I, FRANK E. LUDINGTON, a citizen of the United States, residing at Waterbury, county of New Haven, and State of Connecticut, have invented certain new and useful Improvements in Continuous Cigarette-Machines with Tipping Attachments, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates to that class of continuous cigarette machines in which a wrapper is secured upon a continuous filler, and a section of tipping material, as sheet-cork, is attached at regular intervals to the wrapper, and the cigarette-rod subsequently divided intermediate to such sections, and through the middles of such sections, to form cigarettes with mouth-pieces attached.

The present invention comprises improved means for supplying sections of the tipping material to the continuous wrapper, for securely pasting the wrapper where the tipping-sections are applied, and for delivering the alternate cigarettes in different receptacles, in which the cigarettes lie with the tips upon the opposite ends of the cigarettes.

In the present construction, the cork-sections are formed from a continuous strip which is fed intermittently to a cutter, and the sections taken therefrom by transfer-jaws which deliver the sections successively to a gripper upon a tipping-roll. The section is pasted in connection with its transfer to the wrapper, against which it is pressed by a raised seat upon the tipping-roll. By applying paste to the section after it is grasped by the gripper, it can be applied directly to the paper wrapper and not handled at all after the paste is received; but the small portion of each section which is held in the gripper thus escapes the application of paste, and it is desirable to furnish additional means for securing the application of paste to the edge of the cork-tip when the wrapper is pasted and folded upon the filler, and such additional means is provided herein, so that the tip is securely pasted at the mouth-piece of the cigarette.

The invention also includes details of

construction which will be understood by reference to the annexed drawing, in which— 55

Figures 1 and 2 show a front elevation of the machine, the junction of the two figures being on the line $x-x$ in each figure. Many details are omitted in Figs. 1 and 2, which are supplied in the detail views. 60 Fig. 1^a is an end view of the cigarette-cutting and delivery-apparatus; Fig. 1^b is a plan of part of the cigarette-rod with the tipping-sections thereon; Fig. 2^a is an elevation of the cork-strip-feed, and Fig. 2^b 65 is an end view of the same with the cork-strip shown in section, both views being enlarged over the scale shown in Fig. 1. Fig. 3 is a rear elevation of the frame of the machine with the driving-gearing; Fig. 4 70 is a plan, and Fig. 5 an elevation of the means for pasting the edges of the cork-tips upon the wrapper. Fig. 6 is a plan partly in section (on line 6—6 in Fig. 1^a) of the cigarette-delivery apparatus; Fig. 7 is a rear elevation showing the delivery-tube raised to clear the moving cigarette; Fig. 8 is an elevation of the devices for cutting the cork-tips and applying them to the wrapper just prior to the cutting of a section 80 from the cork-strip; Fig. 9 is a similar view with the cork-section transferred to the tipping-roll; Fig. 9^a is an end elevation of the cork-feeding-bed and dog; and Fig. 9^b an elevation of the tipping-roll 85 with the transfer-jaws inserting the cork-section therein. Fig. 10 is an end view of the cork-strip feeding devices with the gearing for driving the same; Fig. 10^a is a similar view of the transfer-jaws and their 90 rocker detached from the adjacent parts. Fig. 11 is an end view of the means for driving the tipping-roll and applying paste to the same; Fig. 12 is a front elevation of the same parts; Fig. 13 is a bottom view of 95 the pasting-roll and the pastebox; Fig. 14 is a cross-section of the folder where the paste is applied to the wrapper, with the pasting-disks in working position. Fig. 15 is a perspective view of the strip-feeding parts, and Fig. 16 is a perspective view of the folder.

A⁶ designates the frame of the machine, B⁷ a main driving-shaft with driving-pulleys C⁷; D⁷ a cutter-shifting-shaft connected with the main driving-shaft by change-wheels E⁷;

and F^6 a so-called "unison-shaft" connected with the cutter-shifting-shaft D^7 by gears F^{80} and change-wheels E^7 . (See Figs. 1 and 3.) Two receptacles or trays G^9 and G^{10} are shown to receive the finished cigarettes, and two chutes H^9 and H^{10} are extended from the cigarette delivery-trough I^4 to the two receptacles.

J^6 designates a folder formed of top and bottom sections grooved at their junction, to form the cigarette-rod; K^6 a paste-wheel for pasting the edge of the wrapper, L^3 a tape mounted upon tape-wheels L^4 and L^2 , the former being connected by spur-gears and bevel-gears M^4 with the driving-shaft B^7 . The spur-gears M^4 are indicated only by dotted circles in Figs. 1 and 3, on account of the excessive smallness of the scale.

The parts so far described are of ordinary construction, as well as the cutter N which is driven in the usual manner by belt and wheels N' , and is mounted upon a cutter-carriage O reciprocated endwise during the cutting movement, by suitable gearing which connects its shaft O' with the cutter-shifting-shaft D^7 .

P^3 indicates the usual tobacco feeding-hopper which supplies the tobacco to a trough P^4 through which the wrapper p is extended from a reel p' . The wrapper is shown in Fig. 2 extended from a reel over guide-rolls through a printing apparatus Q for printing labels upon the wrapper as is usual, and from thence to a wrapper-supporting-wheel R^5 from which it is led over a guide-roll R^6 and through a guide R^{20} to the trough P^4 , from which it passes into the folder J^6 as is usual.

Fig. 1^b shows a portion of the cigarette-rod with two tipping-patches thereon having a dotted line a' drawn across the middle where they would be severed by the cutter. A dotted line a^2 also crosses the cigarette-rod showing where it is divided intermediate to the tipping-patches, thus disposing the alternate cigarettes a^3 — a^6 cut from the rod with their mouth-pieces a^4 — a^5 upon opposite ends.

I will now describe the novel features of construction which form and apply the cork-section to the wrapper before it is folded around the filler.

Cork-feeding and cutting devices.—The cork-strip s is fed from a reel S^9 (see Fig. 2) over guide-rolls S^{10} to a cork-feeding bed S^2 which is mounted upon the frame A^6 by a bracket A^7 . The feed-bed has marginal guides s^{20} for the edges of the cork-strip. The guide-rolls are pivoted upon a slotted feed-arm S^6 which is hinged to the feed-bed by pivot T^9 , and a link S^3 is connected adjustably to the feed-arm by bolt S^4 and to a crank-pin T^{11} rotated by gear connections to be hereinafter described. A dog-spindle

U is journaled across the bed upon suitable standards and a sloping-dog U' is held adjustably thereon by clamp-screw U^2 . The dog-spindle is provided with a crank-arm U^3 , and a rod U^4 connects the same adjustably with the slotted feed-arm by means of a bolt U^5 fitted to a slot U^6 in such feed-arm, (Fig. 2^a.) The dog U' is permitted a very limited movement by a stop u^7 mounted upon the feed-bed.

The rotation of the crank-pin T^{11} oscillates the slotted feed-arm and the crank-arm U^3 , but so small a movement is permitted to the dog and feed-arm upon the dog-spindle U that the link U^4 produces a reciprocating motion of the feed-bed S^2 , the rear movement of the rod U^4 (indicated by the arrow u^{40} in Fig. 9) operating to lift the dog from the cork-strip s as indicated in dotted lines in Fig. 9, and the reverse movement operating first to press the dog upon the cork-strip and then to move the feed-bed forward with the strip, as in Fig. 8. The oscillations of the top roll S^{10} draws the strip s from the reel. The extent of such feeding movement to produce a cork-section of the desired length, is regulated by adjusting the connections of the link S^3 and the rod U^4 with the slotted feed-arm S^6 .

Adjacent to the delivery end of the feed-bed, a fixed clamp V^{40} is supported, having upwardly projecting studs V' with collars V^2 at their upper ends and a clamp-bar W fitted movably next the clamp V^{40} with spiral springs V^3 fitted between such bars and the collars, to press the movable clamp normally upon the cork-strip. A lifter-bar W' is projected upwardly from the movable clamp W to raise the same as the cork-strip is fed forward. A fixed cutter X is attached to the fixed clamp V^{40} and a cutter-arm Y^9 is pivoted upon a shaft Y^{10} adjacent to the upper end of the lifter-bar W' , and a cutter-blade X' is jointed to the end of the cutter-arm and its lower end pressed toward the fixed cutter X by a spring X^2 .

A head-piece Y^{20} is secured adjustably upon the upper end of the lifter-bar W' by screws (see Fig. 10), and a plate Y^{30} is extended from the cutter-arm with a slot y to embrace the upper end of the lifter-bar W' . The cutter-arm Y^9 is oscillated, as hereinafter described, to raise the cutter after severing each section s' from the cork-strip s , and the head-piece Y^{20} is so adjusted that such upward movement of the cutter-arm also lifts the movable clamp W , to permit the advance of the cork-strip when feeding a succeeding section to the cutter. It is common when pressing a cutter-blade, as X' , elastically against the fixed cutter like X , to form the movable cutter-blade with a sloping cutting edge provided at one end with a vertical tongue, which overlaps the face of the

fixed blade at one end when the movable blade is raised, and thus prevents the movable blade from slipping over the top of the fixed blade, which would prevent its subsequent descent. Such tongue lies beyond the path of the cork-strip s , at one side of the same. Fig. 8 shows the movable clamp thus raised, and the cork-strip fed forward, while Fig. 9 shows the clamp and knife lowered and the section s' severed from the strip.

A so-called "rocker" Z^6 is pivoted upon a stud Z^7 on the frame A and provided with jaws for gripping a tipping-section and transferring it from the clamp to a tipping-roll c , which applies the sections to the wrapper p upon a wrapper-wheel R^5 . The rocker is pressed normally toward the clamp by a spring T^5 and is oscillated by means to be hereinafter described. The rocker, as shown in Fig. 10^a, has a fixed jaw z upon its upper end and a movable jaw z' fitted to the rocker by slide-bars z^2 , which have collars and springs z^3 to press the jaws normally together. The rocker oscillates to move the jaws toward the clamps where they are opened by suitable mechanism and closed upon the middle of the section when the same is moved forward and then carry the section to the tipping-roll. The means for opening and closing the jaws can be described and then their operation jointly with the tipping-roll. The rocker Z^6 has a trip-shaft y' mounted thereon with fingers y^2 extended under the collars on the slide-bars to lift the jaw z' , and the trip-shaft has arms x^9 and x^{10} fixed thereon and arranged to contact with stationary abutments upon the frame when the rocker moves in its two extreme opposite positions, the arms operating in turn to shift the fingers y^2 , and thus open the jaws in such extreme positions, and hold them opened for a short time in each of such positions until the arms are moved from contact with the abutments. The arm x^9 is connected adjustably with the trip-shaft y' by a split hub and clamp-screw so as to vary its operation upon the jaws, and the arm x^{10} has an adjustable connection with its abutment by means of a hinged stem x^{20} fitted through a hole x^{30} in a stationary abutment, and provided with an adjustable collar x^{40} which can be adjusted to contact with the abutment at any desired point in the movement of the rocker.

As the rocker moves to the position next the clamp as shown in Fig. 8, the collar x^{40} contacts with the abutment and throws the finger y^2 upwardly, thus opening the jaws to receive the cork-strip as it advances. The collar is so adjusted that when the rocker is moved away from the clamp to the middle of the projected section, the jaws close thereon and the rocker then remains station-

ary until the section is cut from the strip s . As the rocker moves to the opposite position shown in Fig. 9^b, the arm x^9 strikes the lower corner of the fixed clamp V^{40} , which operates to lift the finger y^2 and open the clamp to deliver the section to the tipping-roll.

The tipping-roll c is bored to turn loosely upon a stud c' carried by a bearing d adjustable upon the frame adjacent to the wrapper-supporting-wheel R . The roll c has a longitudinal notch in one side with a cylindrical bore at its base in which the journal of a gripper e is fitted movably and provided at its outer end with an arm e' which is shifted by a cam f upon the bearing to open and close the gripper. The arm e' is shown in Figs. 9 and 11 with a roll e^2 thereon to press upon the cam, and the cam f is shown in Figs. 11 and 12 attached to the bearing which carries the stud c' ; but in Fig. 9 the cam is shown without the bearing, to exhibit the arm and gripper clearly. In Fig. 9, the cam is shown in its relation to the roll, but the bearing is omitted to exhibit the other parts clearly. A spring f' operates upon the arm e' to hold the gripper normally closed by pressing the roll toward the cam. The bearing d is shown broken away in Fig. 8 to show the spring clearly. Fig. 9 shows the gripper closed upon one end of a tipping-section s' , while Fig. 9^b shows the gripper opened to admit the forward end of the section.

A concentric seat c^2 projects from the surface of the roll c in the rear of the gripper, (in relation to its rotation indicated by the arrows f^2), and supports the section in its movement beneath a pasting-roll h' and in its application to the wrapper p , as shown in Fig. 8. The seat c^2 carries the pasted section immediately into contact with the wrapper p upon the wrapper-supporting wheel R^5 , the cam f simultaneously opening the gripper so that the patch s' is transferred wholly to the wrapper. The forward edge of the patch which escapes the paste is held in the gripper but a moment, and springs immediately backward into line with the body of the patch so as to lie close upon the wrapper, as shown in Fig. 8.

The tipping-roll is removable from its stud c' , and is provided next the cam with a short sleeve to separate it therefrom, and at the opposite end with a gear-wheel d' which is rotated by suitable connections to the driving-shaft B^7 .

The bearing d is provided with an adjusting-screw c^3 which bears against a stationary abutment c^4 and serves to adjust the roll c toward the wrapper p in applying the tipping-sections thereto, and also compensates for necessary changes in the size of the tipping-roll, which is varied to cor-

respond with the length of the cigarettes that are tipped.

The paste is supplied to the tipping-section, immediately upon its attachment to the roll by the gripper, through the medium of the paste-roll h journaled in the bottom of the pastebox g . The pastebox is mounted adjustably upon a leg g' by means of a bolt and slot connection g^2 , and the leg carries a stud g^3 upon which the paste-roll is mounted to turn loosely and provided upon its inner end with a gear h' to mesh with the gear d' upon the tipping-roll. The leg is in turn mounted adjustably upon the bearing d by a slotted foot fitted over the outer end of the stud c' , and secured thereon by a nut h^2 . The adjustment of the pastebox enables it to be set accurately in contact with the upper side of the paste-roll, and the adjustment of the leg enables the paste-roll to be adjusted accurately in contact with the seat c^2 upon the tipping-roll. One edge of the pastebox adjacent to the paste-roll is formed with a seat h^2 to which a doctor h^3 is fitted and held in place by a cap h^4 . The doctor is adjustable toward the periphery of the paste-roll by means of a screw h^5 to regulate the supply of paste to the rolls.

Figs. 3, 8 and 10 show the connections from the driving-shaft for actuating the feeding device, the cork-cutter, the rocker and the tipping-roll, all of which are driven from an auxiliary-shaft i in the following manner. The shaft is extended through the frame adjacent to the edge of the wrapper-wheel R^5 and connected with the tipping-roll and with the feed-crank-pin T^{11} by a cog-wheel j , which is merely indicated by dotted lines in Fig. 8 to avoid obscuring the cams which are represented upon the shaft. The gear-wheel j is connected with a crank-plate k carrying the feed-crank-pin T^{11} by means of gear-wheels l , and with the gear d' upon the tipping-roll by means of gears m , all of which are indicated in Fig. 8 merely by dotted lines.

The wrapper-supporting wheel R^5 and the tipping-roll are positively rotated at the same surface speed so that the pasted section s' may be applied to the wrapper without any slip. The roll c is made changeable upon the stud c' to provide for tipping cigarettes of different lengths, as the long cigarettes require a larger tipping-roll than the shorter cigarettes; and when a larger roll is slipped upon the stud it is provided with a larger gear-wheel d' which necessitates a re-adjustment of the bearing d to make such gear-wheel mesh with the gears m . The wrapper-supporting-wheel R^5 is driven from the main driving-shaft B by means of bevel-gears F^{20} and spur-gears F^{30} , which latter are indicated by dotted circles

in Fig. 3, the scale being too small to show the teeth of the wheels.

As the "unison-shaft" is in connection with the main driving-shaft, the wrapper-supporting wheel R and the tipping-roll c are thus driven at the required surface speed. The shaft i is also furnished with cams to actuate the cork-cutter and the rocker which carries the transfer-jaws. The cutter-arm Y^9 is shown in Figs. 8 and 10 upon a shaft Y^{10} extended through the frame A and having an arm G^{20} upon its inner end which is actuated by connection to a cam G^{30} upon the shaft i .

A cam H^{70} and arm H^{20} oscillate a shaft H^{30} to move the rocker Z^6 , the rocker being pulled in one direction by spring T^5 and pressed in the other direction by the cam through the agency of a lever H^{40} . This lever, shown in Figs. 8, 10 and 11, bears upon the rocker at one end of the jaw z , and the cam H^{70} is shaped, as indicated adjacent to the reference letter o^2 in Fig. 8 with a raised seat which moves the rocker from the cork-cutter outwardly to the middle of the cork-section s' and holds it in that position until the cork-section or patch is severed from the strip. The cam H^{70} is also furnished with a more elevated seat o^4 which then shifts the transfer-jaws nearly to the tipping-roll as indicated in Fig. 9^b, the jaws remaining closed until the cork-section is grasped by the gripper e and being opened in the final movement of the jaws, by the contact of the arm x^9 with the abutment on the clamps V^{40} . The cork-cutter, the transfer-jaws and the tipping-roll are thus operated successively in the manner desired.

The full operation of the transfer jaws and tipping-roll is as follows: When a cork-patch has been severed by the cutter X' , as indicated in Fig. 9, the cutter and the clamp W are lifted to permit the cork-strip s to be fed forward, as shown in Fig. 8, the clamp W being then lowered. The rocker Z^6 stands next the cutter with the jaws z, z' held open by the rod x^{20} , as shown in Fig. 8, during the advance of the strip, and the rocker is then moved outwardly by the lever-arm 40 , the movement of the rod x^{20} away from the abutment x^{30} , permitting the springs z^{30} to close the jaws upon the middle of the cork-patch s' . The further advance of the rocker inserts the forward edge of the patch into the gripper upon the tipping-roll, as shown in Fig. 9^b. The gripper closes upon the edge of the patch, the arm x^9 at such time striking the clamp V^{40} , as shown in Fig. 9, thus releasing the jaws from the patch, which is immediately drawn out of the jaws by the rotation of the tipping-roll. Such rotation lays the patch upon the seat c^2 , which supports the patch

during its movement under the pasting-roll h , which pastes all of the patch excepting the edge within the gripper. The freshly pasted surface is immediately carried against the wrapper p as shown in Fig. 8, and the patch delivered thereto by the opening of the gripper e which releases it in time for its pasted surface to fully adhere to the wrapper. The cork is very resilient, and in practice, the edge of the patch s' which is embraced by the gripper is very narrow, and springs into contact with the wrapper when it is released from the gripper, so as to lie flat upon the wrapper. The margin of the cork-patch along the edge of the wrapper is subsequently pasted to make it adhere to the wrapper firmly, as next described herein; and the patch is thus securely fastened to the wrapper so that when the patch is divided at the middle upon the line a' in Fig. 1^b, the cork-tips are firmly adherent to the divided cigarettes. Upon the release of the patch from the jaws z, z' , the rocker Z^6 moves backwardly to the position shown in Fig. 8, the rod x^{20} operating by contact with the abutment x^{30} , to open the jaws to receive another patch s' .

Pasting of wrapper and cork-sections.—It is desirable to avoid forming the lap-joint a^5 of the cork-patch or section on a line with the joint a^6 of the wrapper (see Fig. 1^b), and such coincidence of the joint is avoided by attaching the cork-patches or sections to the wrapper so as to slightly overlap one edge of the same, as shown at s' in Fig. 3^a. This arrangement projects one edge of the cork-patch slightly over one edge of the wrapper, and it has been found in practice that the means for applying paste to the edge of the wrapper in the folder has been inadequate to properly paste the projecting edge of the cork-section and thus leaves the edge of the cork-tip loose upon the mouth-piece. This is rectified in the present invention by providing a pressing-disk r to press the exposed edge of the cork-patch s' against the paste-wheel K which applies paste to the wrapper. This is illustrated in Figs. 1, 4, 5 and 14, where the usual folder J^6 is shown with a cap J' adapted to fold the pasted edge of the wrapper downward as soon as it is pasted, so as to close the seam. The paste-wheel K^6 is shown adjacent to the end of such cap, with the disk r supported upon an adjusting-arm r^2 which can be moved to adjust the pressing-disk in relation to the paste-wheel; and clamped, when adjusted, by the screw r^3 . This pressing-disk is formed at one side with a seat r' of the same length as the cork-patch s' , and is revolved at such rate as to press each patch as it passes the edge of the paste-wheel K^6 against the pasted edge of the wheel.

The wrapper p as shown in Fig. 14 lies next to the filler p' and contiguous to the edge of the paste-wheel K , thus naturally crowding the cork-patch s' away from the edge of the disk so that it would escape contact with the paste unless positively pressed against the disk.

It is necessary to provide the raised seat r' upon the pressing-disk, as otherwise the edge of such disk would become loaded with paste by contact with the edge of the paste-wheel K^6 above the edge of the wrapper.

By the construction shown, the edge of the pressing-disk is kept clean and does not, therefore, foul the outer edge of the cork-section where it presses against it. The edge of the disk is slightly flared as shown in Fig. 14, and the edge of the pressing-disk r is slightly coned in opposition thereto, so as to tip the edge of the cork over and press it against the paste upon the upper edge of the disk. This supplies the cork-patch with paste positively so that when the seam is closed by the cap J' the cork is securely fastened, and a perfect mouth-piece is formed.

The pressing-disk r is rotated in unison with the cigarette-wrapper by a connection to the "unison-shaft" F as shown in Figs. 1 and 3, where a shaft F^2 is connected by gears to the shaft F and extended upward to the top of the frame where it is provided with a sprocket-wheel t . This wheel is connected with a sprocket-wheel t' attached to the pressing-disk r , by means of a sprocket-chain t^2 , which is indicated, without showing all of the links, in Figs. 4 and 5 of the drawing. The pressing-disk and its sprocket-wheel t' turn loosely upon a stud t^3 on the adjusting-arm r^2 .

As a sprocket-chain transmits motion without slippage, the pressing-disk is rotated in perfect unison with the movements of the wrapper and the appliances which apply the cork-sections.

Delivery of finished cigarettes.—The cigarettes severed by the cutter N are delivered from the "ledger-tube" I^3 to a guide-tube I^2 adjacent to the delivery-trough I^4 , and the chutes H^9, H^{10} , extend longitudinally under the forward ends of the guide-tube I^2 and delivery-tube to receive the cigarettes therefrom. The improvement in the delivery-trough I^4 consists in providing it with a transverse rock-shaft m' and means for oscillating the shaft in unison with the cutter so as to tip the guide-tube upwardly as shown in Fig. 7, at each alternate motion of the cutter, and thus discharge one-half of the cigarettes into the chute H^9 and receptacle G^9 . This is effected by attaching a crank m^2 to the end of the transverse-shaft m' and oscillating it by connection to a crank-pin v which is rotated by suitable

gears v^4 connected with the shaft O^6 , which reciprocates the cutter-carriage O . The gears v^4 are shown with teeth in Figs. 1^a and 6, but the teeth are omitted from the gears in Fig. 1, as the scale of that figure is too small to represent them. The construction thus delivers the cigarettes alternately into the two receptacles in perfect unison with the cutting mechanism, by reason of the direct connection between their respective gearings.

The cigarettes marked a^3 in Fig. 7 are shown with the tip a upon the rear end, while the cigarettes a^4 shown in Fig. 3 have the tip a upon the forward end so that all the cigarettes in each of the receptacles have the tips arranged at the same end.

Having thus set forth the nature of the invention what is claimed herein is:

20 1. In a continuous cigarette machine, the combination, with a wrapper-wheel having the wrapper carried over its surface, of a tipping-roll revolved close to the surface of the wrapper, means for supplying the cork sections intermittingly to the tipping-roll, means upon the tipping roll for grasping the cork-section, and means for applying paste to the cork-section during the movement of the tipping-roll, whereby the tipping-roll effects the pasting of the sections and the application of them directly to the wrapper.

2. In a continuous cigarette machine, the combination, with a device for feeding a continuous strip of cork, of a clamp for holding the strip when fed forward, a cutter for severing a section from the strip, transfer-jaws for grasping the sections, and means for taking the sections from the jaws and applying them to the wrapper.

3. In a continuous cigarette machine, the combination, with a device for feeding a continuous strip of cork, of a clamp for holding the strip when fed forward, a cutter for severing a section from the strip, transfer-jaws for grasping the sections, means for pasting a section, and a roll having a gripper to receive the sections from the jaws and applying them to the wrapper.

4. In a continuous cigarette machine, the combination, with the frame of the machine and means for applying cork-sections to the moving wrapper, of a feed-bed movable upon the frame with guides for a cork-strip thereon, a cutter adjacent to the feed-bed for severing the sections, a feed-dog having a spindle pivoted upon the feed-bed with a crank-arm attached adjustably to the said spindle, a slotted feed-arm hinged upon the frame adjacent to the bed, a link connected adjustably thereto and to the crank-arm, and a feed-crank-pin having a link connected adjustably to the slotted feed-

arm, whereby the feed of the strip may be varied at pleasure.

5. In a continuous cigarette machine, the combination, with the frame of the machine and means for applying cork-sections to the moving wrapper, of a feed-bed movable upon the frame with guides for a cork-strip thereon, a cutter adjacent to the feed-bed for severing the sections, a feed-dog having a spindle pivoted upon the feed-bed with a crank-arm attached adjustably to the said spindle, a slotted feed-arm pivoted upon the frame adjacent to the bed and having two plates with rolls between the same at the pivoted and free ends of the said feed-arm, a reel for supplying a cork-strip to the feed-bed by passage over the said rolls, a link connecting the slotted feed-arm with the crank-arm upon the dog, and a feed-crank-pin having a link connected adjustably to the slotted feed-arm, whereby the feed of the strip may be varied at pleasure, and the oscillation of the rolls with the free end of the feed-arm draws the cork-strip from its reel.

6. In a continuous cigarette machine, the combination, with means for feeding a cork-strip intermittingly and a cutter for severing sections therefrom, of a rocker having transfer-jaws to receive the sections when severed, a tipping-roll for receiving the sections from the jaws and applying them to the wrapper, and means for vibrating the rocker and for opening and closing the transfer-jaws.

7. In a continuous cigarette machine, the combination, with means for feeding a cork-strip intermittingly and a cutter for severing sections therefrom, of a rocker having transfer-jaws to receive the sections when severed, a tipping-roll for receiving the sections from the jaws and applying them to the wrapper, means for vibrating the rocker, a trip-shaft on the rocker with a finger to open the transfer-jaws, and means connecting the trip-shaft intermittingly with a fixed abutment and operating to open the jaws when desired.

8. In a continuous cigarette machine, the combination, with means for feeding a cork-strip intermittingly and a cutter for severing sections therefrom, of a rocker having transfer-jaws to receive the sections when severed, a tipping-roll for receiving the sections from the jaws and applying them to the wrapper, means for vibrating the rocker, a trip-shaft on the rocker with a finger to open the transfer-jaws, and means connecting the trip-shaft intermittingly, in the opposite position of the rocker, with fixed abutments for opening the transfer-jaws in the said opposite positions, to receive and deliver the tipping-sections.

9. In a continuous cigarette machine, the

combination, with means for feeding a cork-strip intermittingly and a cutter for severing sections therefrom, of a rocker having transfer-jaws to receive the sections when severed, a tipping-roll for receiving the sections from the jaws and applying them to the wrapper, an arm and cam to vibrate the rocker, a spring to press it normally toward the cutter, a trip-shaft on the rocker with a finger to open the transfer-jaws, and means connecting the rock-shaft intermittingly, in the opposite positions of the rocker, with fixed abutments for opening the transfer-jaws in the said opposite positions, to receive and deliver the tipping-sections.

10. In a continuous cigarette machine, the combination, with means for feeding a cork-strip intermittingly and for severing sections therefrom, of a rocker having lower jaws with rods movable through the same and an upper jaw attached to the rods with springs to press the jaws normally together, a trip-shaft upon the rocker with a finger to open the jaws and having the cranks α^9 and α^{10} secured thereon as described, and abutments V^{40} and α^{30} arranged as described, and operating upon the cranks in the opposite positions of the rocker, to open the same at suitable times to receive and deliver the tipping-sections.

11. In a continuous cigarette machine, the combination, with means for feeding a cork-strip intermittingly and for severing sections therefrom, of a rocker having lower jaws with rods movable through the same and an upper jaw attached to the rods with springs to press the jaws normally together, a trip-shaft upon the rocker with a finger to open the jaws and having the cranks α^9 and α^{10} secured thereon as described, abutments to operate upon the cranks in the opposite positions of the rocker, a spring for propelling the rocker in one direction and thereby actuating one of the cranks by its abutment, and means for moving the rocker in the opposite direction and thereby actuating the other crank by its abutment.

12. In a continuous cigarette machine, the combination, with means for feeding a cork-strip intermittingly, of a fixed clamp supported adjacent such feeding means with a fixed cutter thereon, a movable clamp with spring for pressing it normally toward the fixed clamp to grip the cork-strip, a movable cutter, a cutter-arm for reciprocating the same past the fixed cutter, a lifter-bar for the movable clamp, and means connected with the cutter-arm for actuating the lifter-bar when the cutter is raised.

13. In a continuous cigarette machine, the combination, with means for feeding a cork-strip intermittingly, of a fixed clamp supported adjacent such feeding means with a

fixed cutter and studs upon the fixed clamp carrying each a collar and a spiral spring, a movable clamp fitted to the studs beneath the springs for holding the cork-strip, a lifter-bar projected upward from the movable clamp with an adjustable head-block upon the top, a movable cutter, a cutter-arm to reciprocate the same past the fixed cutter, and a slotted plate extending from the cutter-arm beneath the head-block to lift the movable clamp when the cutter is raised.

14. In a continuous cigarette machine, the combination, with means for feeding a cork-strip intermittingly and for severing sections therefrom, of a fixed clamp adjacent such feeding means with a fixed cutter thereon, a movable clamp with springs for pressing it normally toward the fixed clamp, to grip the cork-strip, a lifter-bar extended upward from the movable clamp, a cutter-arm movable adjacent to the lifter-bar, a cutter-blade jointed to the cutter-arm and movable past the fixed cutter, a spring to press the cutter-blade toward the fixed cutter, and means connected with the cutter-arm for actuating the lifter-bar when the cutter-blade is raised.

15. In a continuous cigarette machine, the combination, with the machine frame and means for forming a cigarette-rod with a continuous wrapper, of a wrapper-supporting-wheel and a tipping-roll for applying a cork-patch to the wrapper upon such wheel, a feeding-device for feeding a continuous cork-strip intermittingly, said device having a dog and crank-pin for actuating the same, a cutting device for severing the strip into sections, a rocker with transfer-jaws for grasping the sections and delivering them to the tipping-roll, a cam-shaft with a cam for actuating the cutter, and a cam for actuating the rocker and transfer-jaws, and gear-wheels connecting the cam-shaft with the crank-pin for the feeding-device and with the tipping-roll and wrapper-wheel, whereby the whole are operated in unison.

16. In a continuous cigarette machine, the combination, with means for forming a cigarette-rod with a continuous wrapper, of means for applying cork-patches at intervals to the wrapper, a folder for turning one edge of the wrapper and cork-patch downward and holding the other edge of the wrapper and cork-patch exposed, a paste-wheel with pasted margin for applying paste to such exposed edge of the wrapper and cork-patch, and a rotating pressing-disk operating to press the edge of the cork-patch against the paste-wheel.

17. In a continuous cigarette machine, the combination, with means for forming a cigarette-rod with a continuous wrapper, of means for applying cork-patches overlapping one edge of the wrapper, a folder for

turning one edge of the wrapper downward and holding the other edge exposed with the patch projecting above the same, a pasting-agent for applying paste to such exposed edge of the wrapper, and a pressing-disk with a seat operating to press the exposed edge of the patch against the pasting-agent.

18. In a continuous cigarette machine, the combination, with means for forming a cigarette-rod with a continuous wrapper, of means for applying cork-patches at intervals to the wrapper, cut-off mechanism for dividing the cigarette-rod at the middle of each patch, a folder for turning one edge of the wrapper and patch downward and holding the other edge of the wrapper and patch exposed, a pasting-agent for applying paste to such exposed edge of the wrapper and patch, a pressing-disk with seat to press the patch against the paste-wheel, and mechanism connecting the said pressing-disk with the tipping-mechanism, and with the said cut-off mechanism to operate them all in unison.

19. In a continuous cigarette machine, the combination, with the frame A having the driving-shaft B, the tape-wheels L' and L² connected to such shaft and having the tape L thereon for propelling the wrapper, cut-off mechanism to divide the cigarette-rod, gearing connecting the same with the driving-shaft, means for supplying a wrapper to the tape, means for applying cork-patches at intervals to the wrapper, a unison-shaft connecting such means with the driving-shaft, a folder supported upon the top of the frame and operating to turn down one edge of the wrapper and to hold the other edge exposed, a paste-wheel with pasted periphery for pasting such exposed edge of the wrapper and the attached patch, a pressing-disk with seat thereon to press the cork-patch toward the paste-wheel, and gearing positively connecting such pressing-disk with its unison-

shaft to operate in unison with the cut-off and tipping-mechanism.

20. In a continuous cigarette machine, the combination, with the machine frame and means for forming a cigarette-rod with a continuous wrapper, of means for applying cork-patches at intervals to the wrapper, a cutter and means for operating the same to divide the cigarette-rod at the middle of each patch, two cigarette receptacles for the alternate cigarettes with separate chutes directed toward the same, a guide-tube receiving the cigarettes from the cutter, and a delivery-tube extended between the guide-tube and the chutes and having a transverse rock-shaft with means for oscillating the same in unison with the cutter, for delivering the cigarettes alternately to the said chutes.

21. In a continuous cigarette machine, the combination, with the machine frame and means for forming a cigarette-rod with a continuous wrapper, of means for applying cork-patches at intervals to the wrapper, a cutter with a driving-shaft for driving the same to divide the cigarette-rod at the middle of such cork-patch, two cigarette receptacles for the alternate cigarettes with separate chutes directed toward the same, a guide-tube receiving the cigarettes from the cutter, a delivery-tube extended between the guide-tube and the chutes and having a transverse rock-shaft with rock-arm thereon, and a rotary crank with connections to the rock-arm and to the cutter-driving-shaft, for oscillating the delivery-tube in unison with the cutter.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

FRANK E. LUDINGTON.

Witnesses:

L. LEE,
THOMAS S. CRANE.