

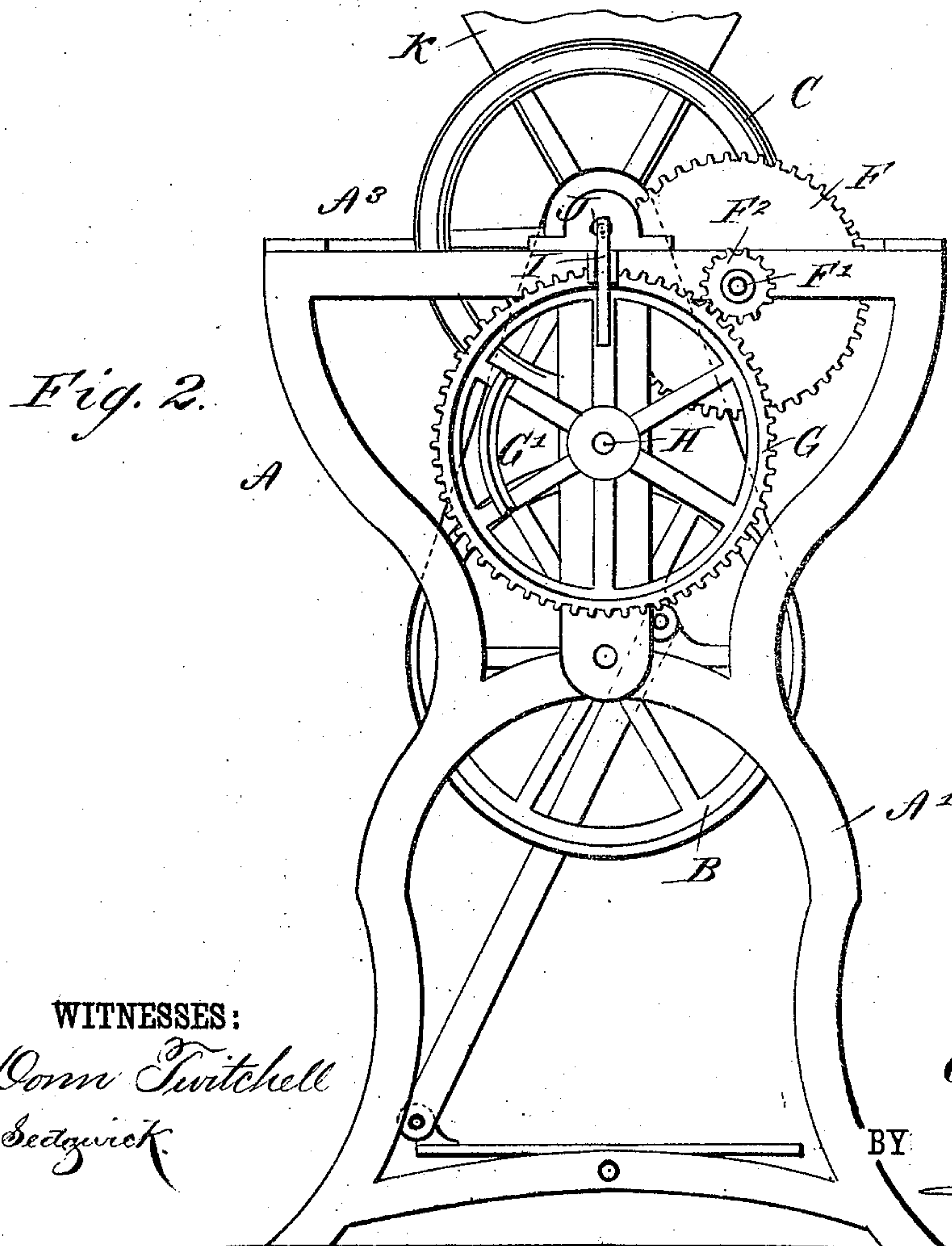
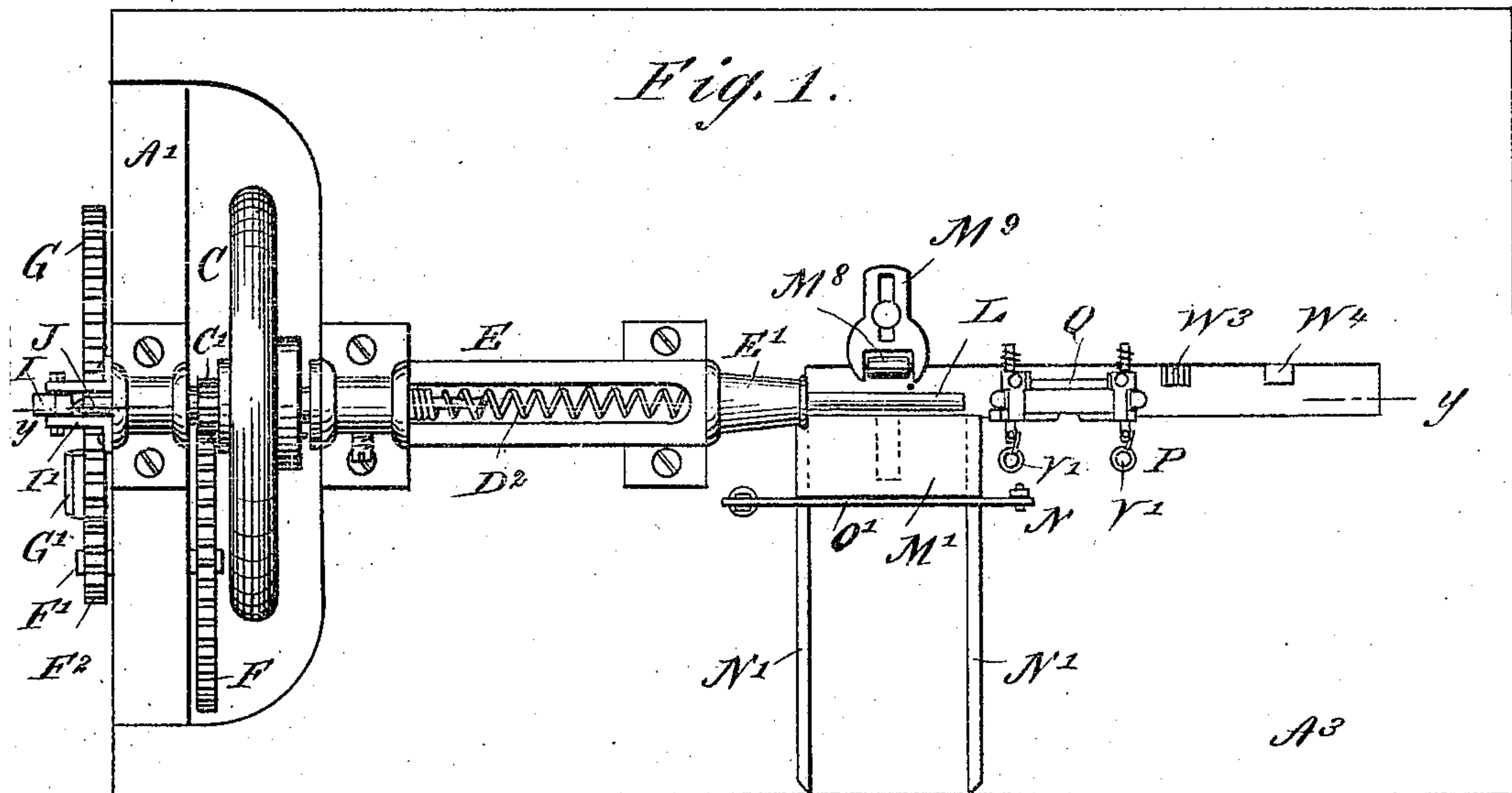
(No Model.)

4 Sheets—Sheet 1.

A. DE ZAYAS Y MORENO.
CIGARETTE MACHINE.

No. 353,054.

Patented Nov. 23, 1886.



WITNESSES:

Dorn Twitchell
C. Sedgwick

INVENTOR:

A. de Zayas y Moreno

BY

Munn & Co.
ATTORNEYS.

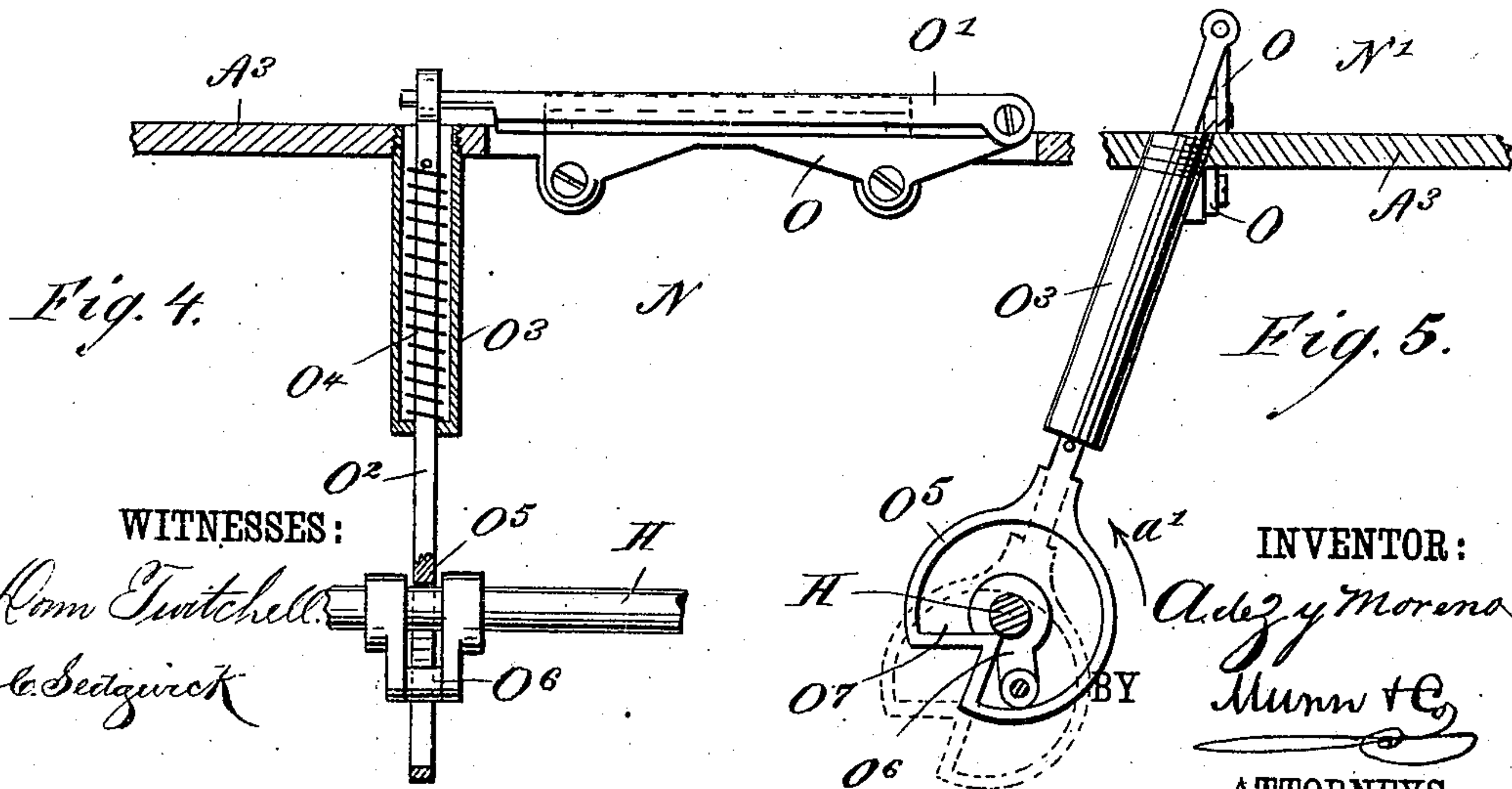
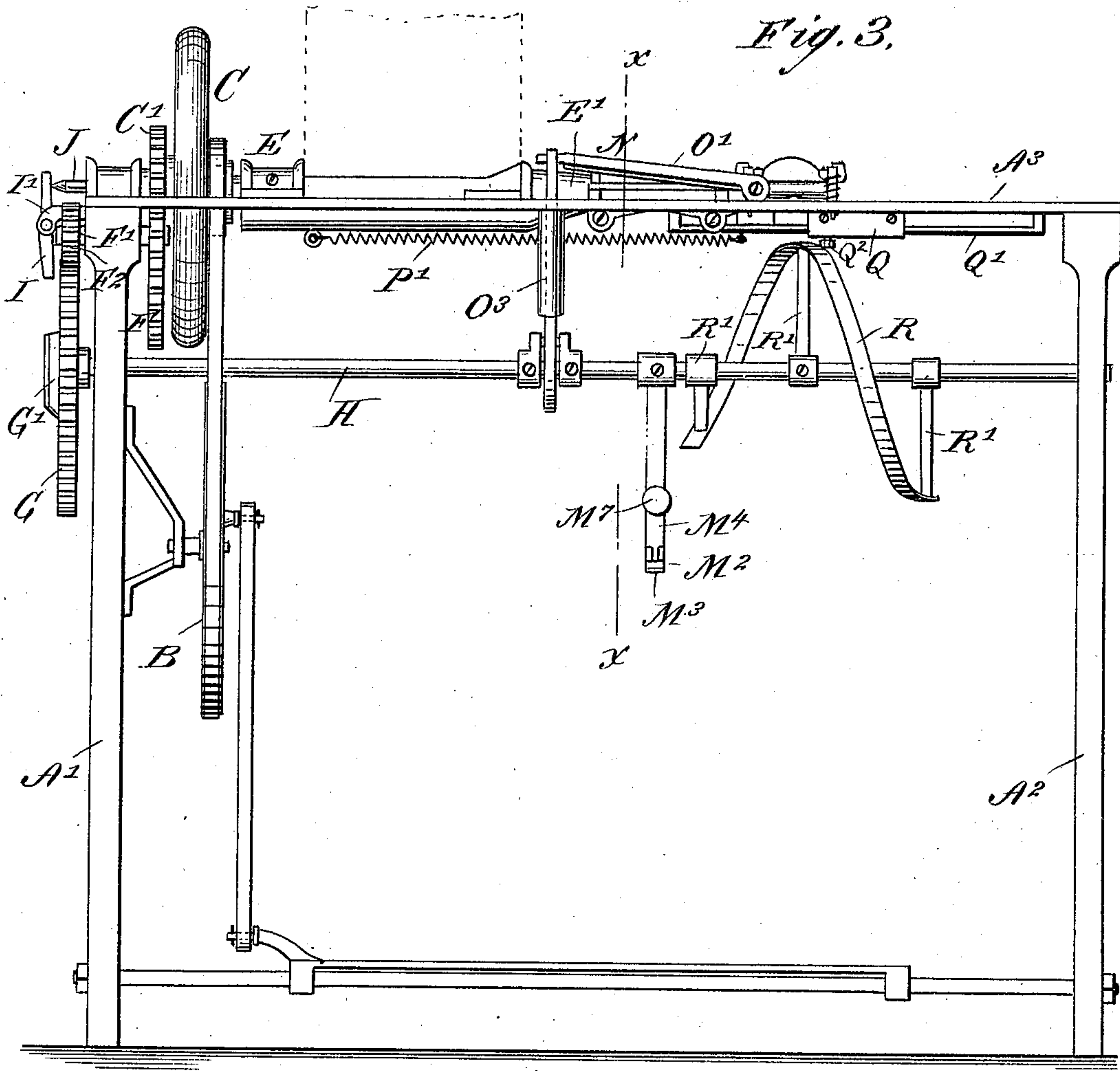
.(No Model.)

4 Sheets—Sheet 2.

A. DE ZAYAS Y MORENO.
CIGARETTE MACHINE.

No. 353,054.


Patented Nov. 23, 1886.



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4 Sheets—Sheet 3.

A. DE ZAYAS Y MORENO.
CIGARETTE MACHINE.

No. 353,054.

Patented Nov. 23, 1886.

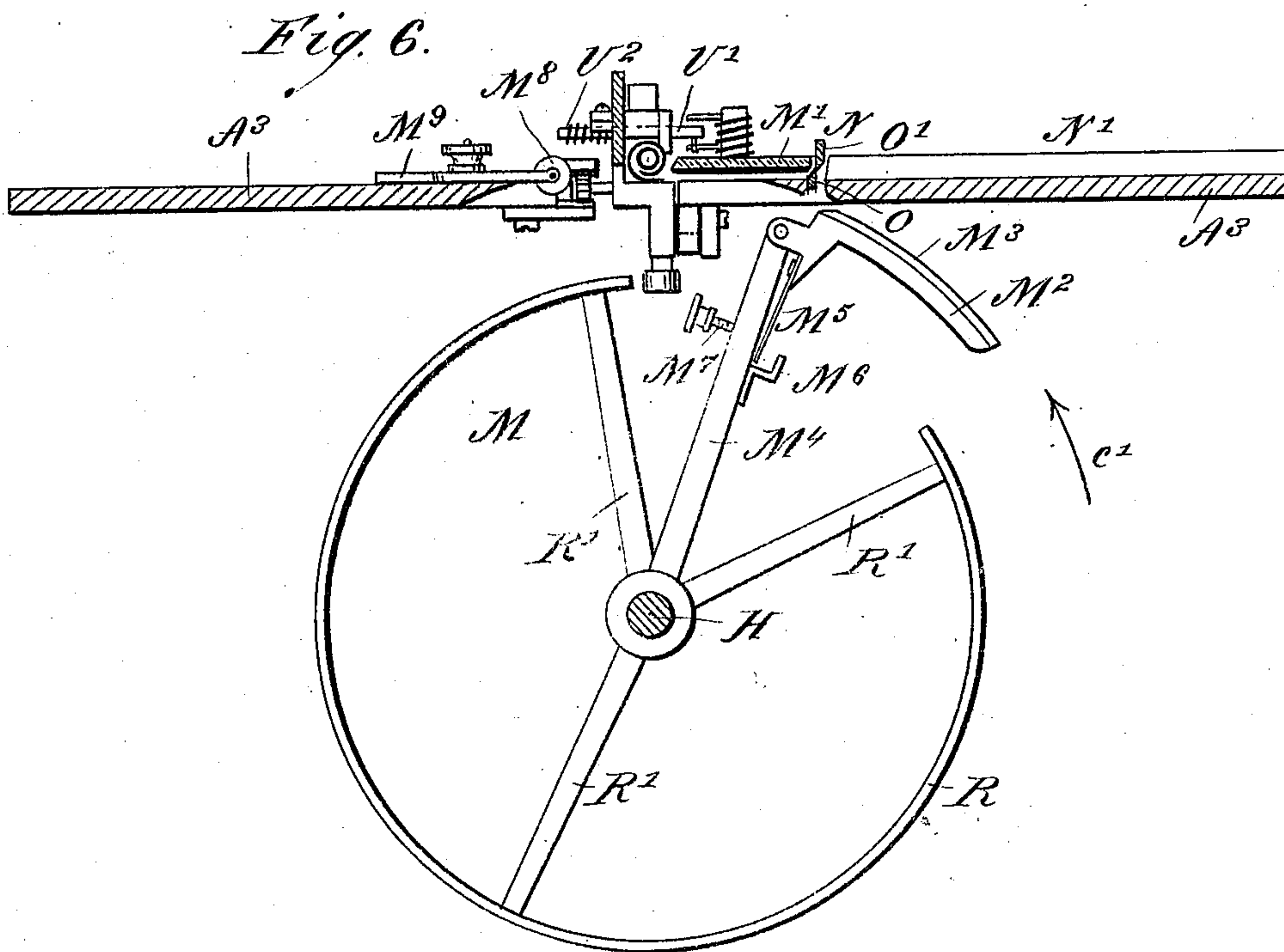


Fig. 8.

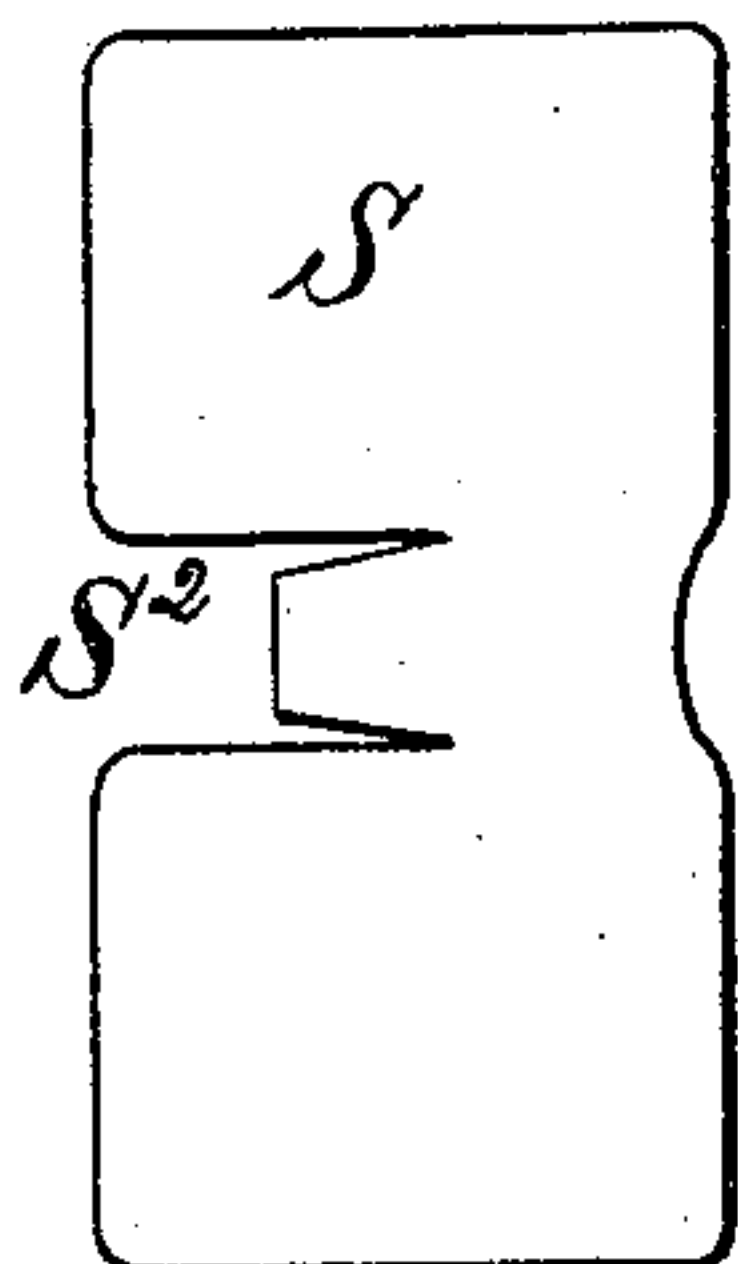


Fig. 7.

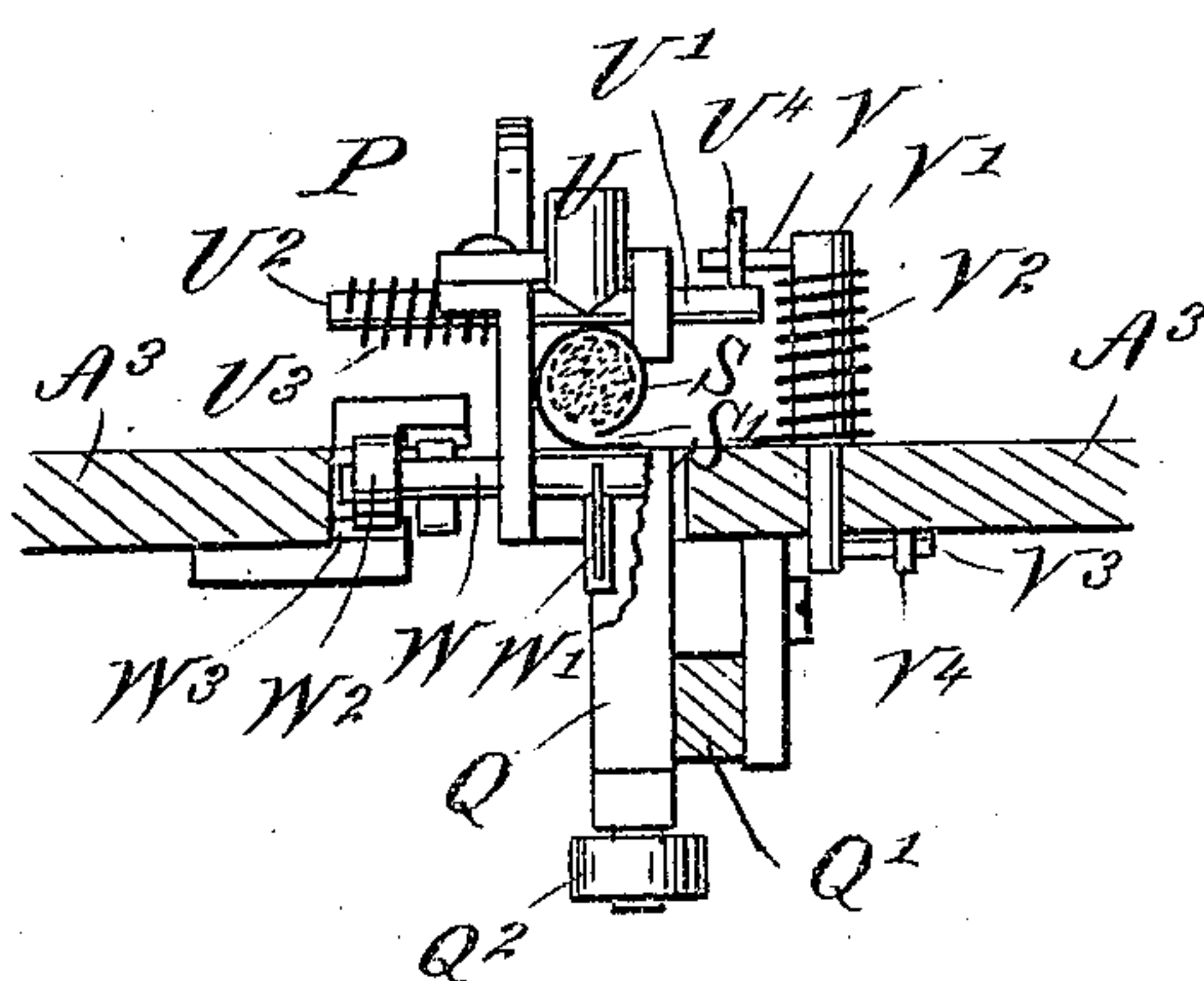


Fig. 9.

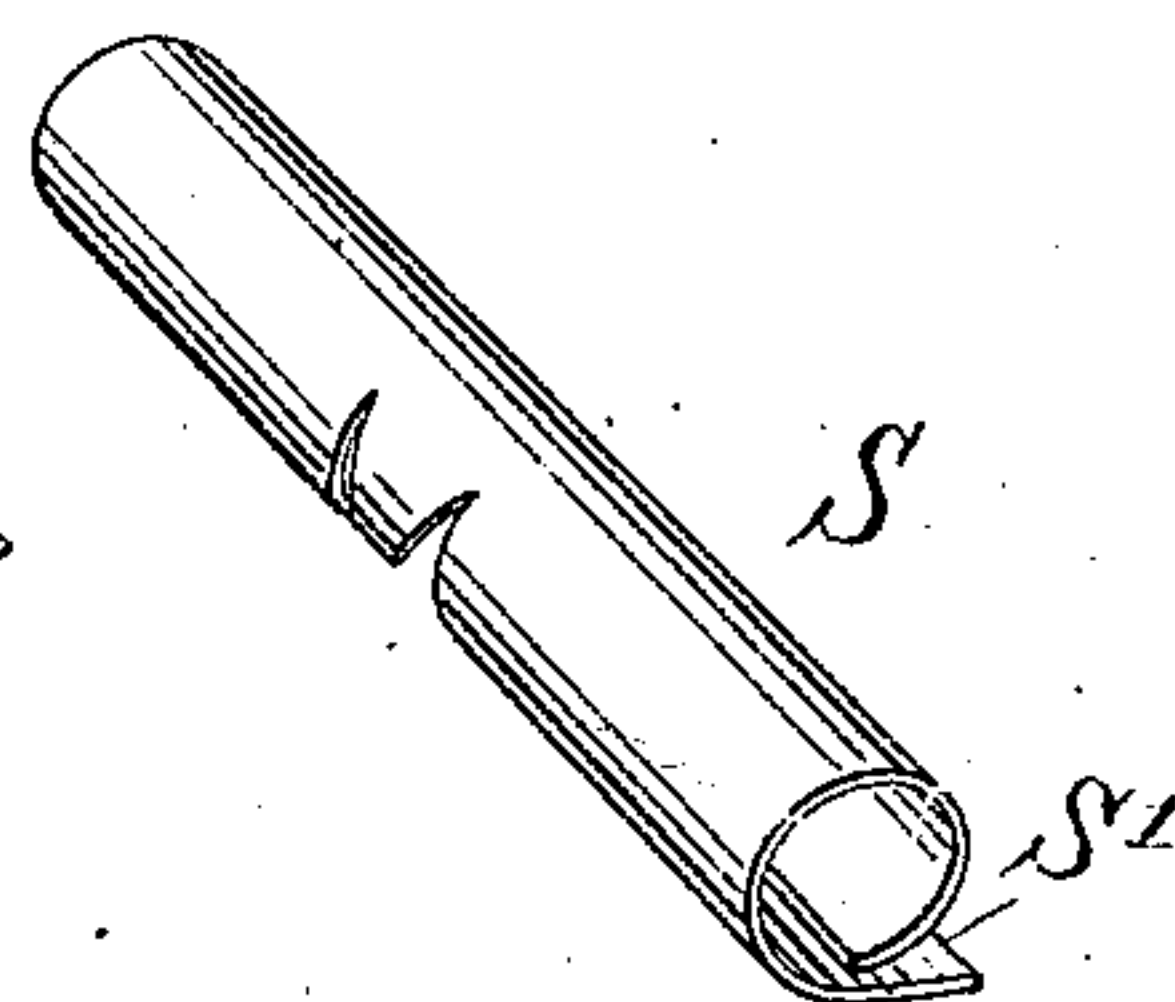
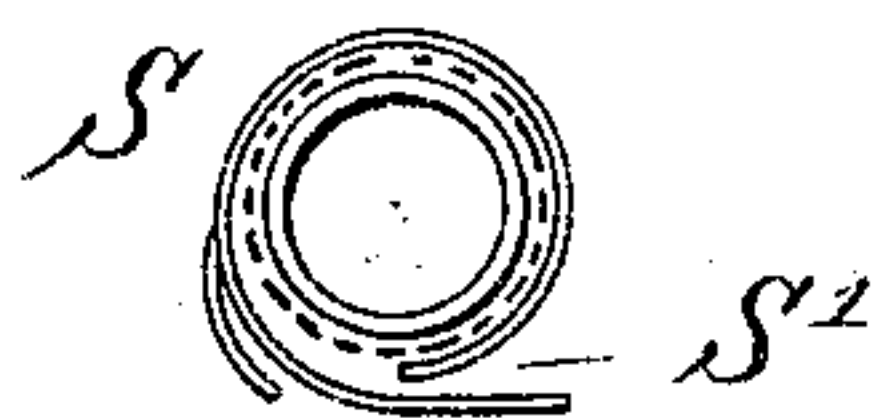


Fig. 10.



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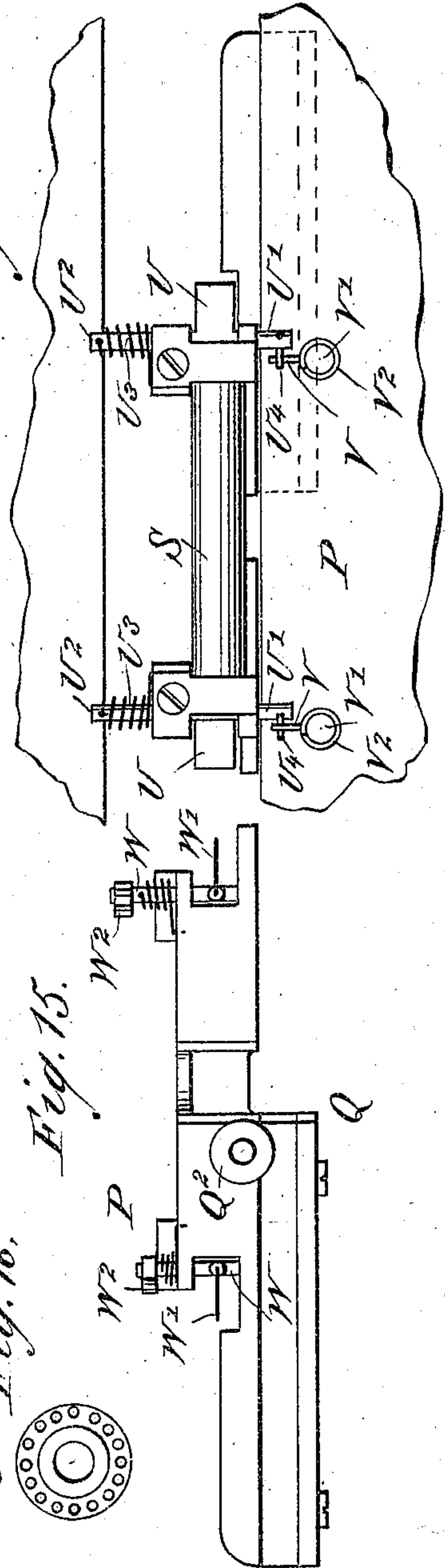
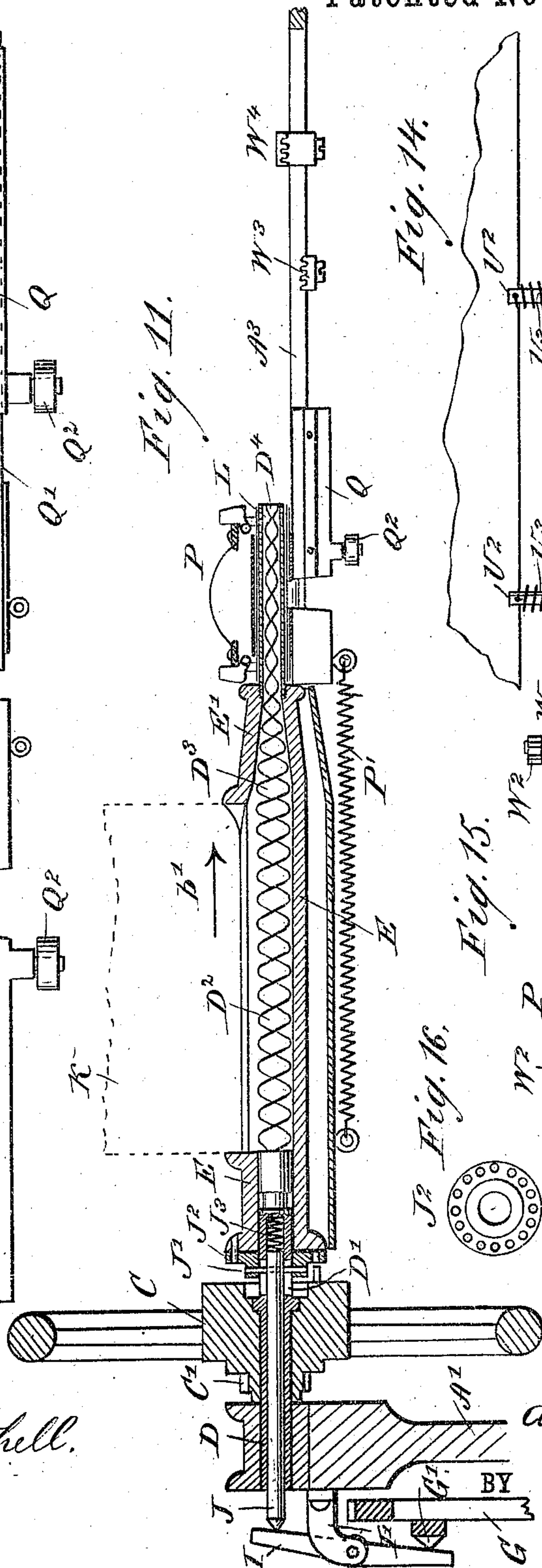
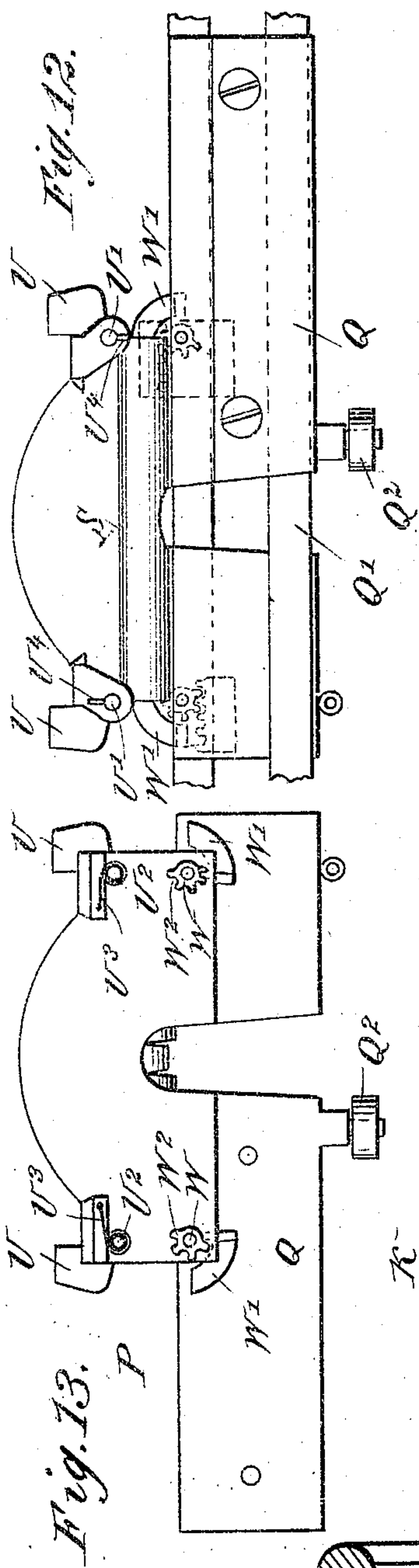
(No Model.)

4 Sheets—Sheet 4.

A. DE ZAYAS Y MORENO.
CIGARETTE MACHINE.

No. 353,054.

Patented Nov. 23, 1886.



WITNESSES:
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UNITED STATES PATENT OFFICE.

AMBROSIO DE ZAYAS Y MORENO, OF MATANZAS, CUBA.

CIGARETTE-MACHINE.

SPECIFICATION forming part of Letters Patent No. 353,054, dated November 23, 1886.

Application filed June 29, 1886. Serial No. 206,603. (No model.)

To all whom it may concern:

Be it known that I, AMBROSIO DE ZAYAS Y MORENO, of Matanzas, Cuba, have invented a new and Improved Cigarette-Machine, of which the following is a full, clear, and exact description.

The object of my invention is to provide a new and improved cigarette-machine which is simple in construction and effective in operation, producing a perfect cigarette.

The invention consists of various parts, details, and combinations, as will be fully described hereinafter, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan view of my improvement. Fig. 2 is an end elevation of the same. Fig. 3 is a front elevation of the same. Fig. 4 is a front elevation, partly in section, of the cutting mechanism. Fig. 5 is an end elevation of the same, parts being in section. Fig. 6 is a sectional end view of the mechanism for forming the wrapper, on the line *x x* of Fig. 3. Fig. 7 is an enlarged similar view of part of the same. Figs. 8, 9, and 10 are detail views of the wrapper-carrier. Fig. 11 is a longitudinal vertical section on the line *y y* of Fig. 1. Fig. 12 is a front elevation of the device for folding the ends of the wrapper. Fig. 13 is a rear elevation of the same. Fig. 14 is a plan view of the same. Fig. 15 is a bottom view of the same. Fig. 16 is a face view of the clutch.

On the main frame A, of suitable size and shape, is mounted a driving-wheel, B, which receives a rotary motion, either by foot or by steam power, in any suitable manner. The driving wheel or pulley B imparts a rotary motion, by means of a belt or other device, to the fly-wheel C, mounted to rotate loosely on a hollow shaft, D, having its bearing in the standard A' of the main frame A and in the stationary shell E, secured to the table A³ of the main frame. The fly-wheel C is provided with a pinion, C', which meshes into the gear-wheel F, secured to a shaft, F', having its bearing in the standard A', and carrying a pinion, F'', which meshes into the gear-wheel G, fast-

ened on the cam-shaft H, having its bearing in the standards A' and A².

On the gear-wheel G is secured the segmental projection or cam G', which operates on the lever I, fulcrumed on the bracket I', secured to the standard A', the upper end of the lever I being in contact with the shaft J, having its bearing in the hollow shaft D, and being rigidly connected by a pin, J', with a clutch-plate, J², which is thrown in and out of contact alternately with the fly-wheel C and with the stationary shell E, which supports the hopper K.

Against the inner end of the shaft J presses a coil-spring, J³, placed in the hollow shaft D, which is also provided with a longitudinal slot, D', through which passes the pin J'. The hollow shaft D is formed into a distributing-screw, D², of equal diameter throughout the length of the hopper K, and is then formed into a conical and packing screw, D³, which terminates in the distributing-screw D⁴, of equal diameter through its length. The hopper K opens into the shell E, which is conical in shape at E' and closely surrounds the conical screw D³.

Into the end of the conical part E' of the shell E screws a tube, L, around which is placed the wrapper, by means of the rolling and stamping device M, after the said wrapper has been cut to its proper size by the cutting mechanism N, (shown in detail in Figs. 4 and 5,) and which is provided with the guides or rails N', placed transversely on the table A³ of the main frame, the distance between said rails being equal to the width of the material which is to form the wrapper.

At the inner ends of the guides or rails N' is placed and secured to the table A³ the knife-blade O, on one end of which is hinged the upper knife-blade, O', the free end of which is connected with the rod O², passing through the tube O³, secured to the table A³. On the rod O² is coiled the spring O⁴, which rests at one end on the bottom of the tube O³, the other end of the spring O⁴ abutting against the pin secured to the rod O². The lower end of the rod O² is provided with a cam, O⁵, on which operates a crank-arm, O⁶, secured to the crank-shaft H, which passes through the cam O⁵. When the crank-arm O⁶ rotates in the direction of the arrow *a'*, the rod O² remains sta-

tionary until the crank-arm O^6 strikes against the arm O^7 of the cam O^5 , and pushes the latter downward to the position shown in dotted lines in Fig. 5, whereby the upper knife, O' , closes on the knife O , and as soon as the crank-arm O^6 passes the inner end of the arm O^7 the rod O^2 is thrown upward again by the action of the spring O^4 , whereby the knife O' opens from the knife O . The wrapper material projects beyond the knives O and O' , under a glass cover, M' , and is then carried to the tube L by the stamping device M , which is provided with a narrow segmental arm, M^2 , carrying on its periphery a rubber stamp, M^3 , and pivoted to an arm, M^4 , attached to the cam-shaft H .

To the segmental arm M^2 is secured a spring, M^5 , which has its lower end guided between the keeper M^6 and the set-screw M^7 , screwing in the arm M^4 . The surface of the rubber stamp M^3 takes hold of the under side of the wrapper and leads the same around the tube L , and as the surface of the stamp is provided with any desired inscription, trade-mark, or other fac-simile, this inscription is imprinted on the under surface of the wrapper. The rubber stamp M^3 is inked by coming in contact during its rotation in the direction of the arrow c' with the ink-roller M^8 , mounted on the frame M^9 , held adjustably on the table A^3 of the main frame A . The set-screw M^7 serves to regulate the pressure of the rubber stamp M^3 on the under side of the wrapper.

The folding device P is provided with a carriage, Q , adapted to slide on the guide Q' in a recess in the table A^3 , and provided with a friction-roller, Q^2 , which is operated by the spiral cam R , secured to suitable arms, R' , fastened to the cam-shaft H . On the carriage Q is held a split tube, S , (see Figs. 8, 9, and 10,) which is provided with a tongue, S^2 , formed as shown, to effect its retention in place, and which tube encircles the tube L in such a manner as to leave sufficient space between its inner surface and the tube L for the thickness of the wrapper, which latter passes into the space through the opening S' , formed by the split ends of the tube S .

On the carriage Q , at each end of the tube S , is hinged a folding block, U , having trunnions U^1 and U^2 , of which the latter is provided with the coiled spring U^3 , while the other trunnion, U^1 , carries a pin, U^4 , which comes in contact, when the carriage Q is traveling, with a horizontal pin, V , secured to a vertical shaft, V' , having its bearing in the table A^3 , and being provided with the coiled spring V^2 .

Directly under each end of the tube S and the trunnions U^1 and U^2 is mounted, in the carriage Q , a shaft, W , carrying the folding-blade W^1 , and provided with the pinion W^2 , which meshes into the small racks W^3 and W^4 , respectively, secured to the table A^3 . A spring, P' , is attached by one end to the carriage Q , and by its other end to the under side of the table A^3 , and said spring serves to force the carriage Q back to the position shown in Fig.

11 after its outward movement, which is caused by the action of the spiral cam R on the friction-roller Q^2 . The shafts V' turn in one direction when struck by the pins U^4 on the trunnions U^1 , and compress the springs V^2 , but are prevented from turning in the opposite direction by the arm V^3 , attached to the shaft V' , striking against the stops V^4 , secured to the under side of the table A^3 .

The operation is as follows: The cam-shaft H receives a continuous rotary motion from the main driving-pulley B , and the hollow shaft D , with its grooved parts D^2 , D^3 , and D^4 , rotates at a higher rate of speed than the cam-shaft H , and its rotation ceases during about one sixth of one revolution of the cam-shaft H , caused by the action of the cam G' of the gear-wheel G on the lever I , which presses the shaft J inward and disengages the clutch-plate J^2 from the fly-wheel C and locks it on the stationary shell E , as shown in Fig. 11. The tobacco is placed in the hopper K , from which it passes to the distributing-screw D^2 , which, when rotating, forces the tobacco forward in the direction of the arrow b' , and when the tobacco reaches the conical part E' of the shell E the conical screw D^3 takes the tobacco, which is then transmitted by the screw D^4 to the end of the same and discharged in a packed form into the wrapper, which now leaves the tube L and is carried in the direction of the arrow b' by the split tube S , in which the wrapper uncoils as soon as the rubber stamp M^3 has forced the wrapper around the tube L . The tube S and its wrapper travel now with the carriage Q to the right by the action of the spiral cam R on the friction-roller Q^2 of the carriage Q . The wrapper projects a short distance beyond each end of the split tube S , and this projecting part of the wrapper is not filled with tobacco, thereby permitting of folding the ends of the wrapper inward toward the tobacco. As soon as the carriage Q has traveled the distance of the projecting ends of the wrapper beyond the tube S the screw D^4 commences to revolve and discharges the packed tobacco into the wrapper, which is traveling with the tube S in the direction of the arrow b' . As soon as the end of the split tube S arrives at the end of the tube L and screw D^4 , then the latter ceases to rotate, and the wrapper has now been filled with sufficient tobacco for the cigarette. The carriage continues to travel to the right, and the pin U^4 of the trunnion U^1 on each end of the split tube S comes simultaneously in contact with the respective horizontal pins V on the shafts V' , which are prevented from turning by the arms V^3 striking against the stop-pins V^4 , whereby the trunnions U^1 are caused to turn, which swings the folding-blocks downward, and thereby closes the upper parts of the ends of the wrapper which project beyond the tube S . As soon as the pins U^4 have passed the pins V the springs U^3 on the trunnions U^2 recoil and turn the trunnions and their folding-blocks U to their former position. The pinions W^2 of the shafts W then come si-

multaneously into contact with the racks W^3 and W^4 , which causes the folding-blades W' to swing upward, and thereby press the lower parts of the projecting ends of the wrapper inward and against the folded upper parts of the ends of the wrapper, so as to complete the cigarette. The cam R now disengages the friction-roller Q^2 , and the carriage Q is drawn back to its former position (shown in Fig. 11) by the action of the spring P' . This return movement of the carriage throws the folding-blades W' downward again; as the pinions W^2 are now turned in the inverse direction by the racks W^3 and W^4 . The cigarette is forced out of the split tube S by the tube L and the screw part D^4 , as both act as a plunger against the folded inner ends of the cigarette when the carriage Q travels inward, as above described. As soon as the carriage is in its former position, as shown in Fig. 11, the operator passes the wrapping material between the knives O and O' to the required length, which can be seen through the glass cover M' , and then the knife O' is moved downward, as before described, by the action of the crank-arm O^6 on the cam-shaft H , whereby the wrapper is cut to the required width. The segmental arm M^2 then takes hold of the under side of the cut wrapper, under the glass cover M' , and pushes it around the tube L , and at the same time prints the wrapper with the mark of the rubber stamp. As soon as the stamp has left the wrapper the latter uncoils against the inner surface of the split tube S , and the carriage now commences its forward movement in the direction of the arrow a' , and the hollow shaft D and its screw parts D^2 , D^3 , and D^4 are again rotated, and the above-described operation is repeated to form another cigarette.

It will be seen that when the cam G' has left the lever I the spring J^3 forces the clutch-plate J^2 into contact with the fly-wheel C , and thus the shaft D is rotated. It will also be seen that when the carriage Q returns the pins U^4 of the trunnions U' come in contact again with the horizontal pins V on the vertical shafts V' , whereby the latter are turned, instead of turning the trunnions U' , and as soon as the pins U^4 are disengaged from the pins V the vertical shaft V' is forced to its former position by the uncoiling of the springs V^2 . The split tube S can easily be taken out of the carriage Q and replaced by another of different diameter or length, if desired. It will also be seen that the width of the material of the wrapper forms the length of the wrapper, and the split tube S is somewhat shorter than the length of the wrapper. It will also be seen that the screw D^2 may be made of a coiled wire in the shape of a corkscrew, as represented in Fig. 1.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. In a cigarette-machine, a distributing, packing, and discharging screw, consisting of

a cylindrical screw part which terminates at one end into a conical screw part, which again terminates into a cylindrical screw part, in combination with a split tube and a stationary shell provided with a hopper and conforming to the shape of the said screw, substantially as and for the purpose set forth.

2. In a cigarette-machine, the combination of a distributing, packing, and discharging screw, a shell inclosing the same, and a split tube arranged to surround the end of the shell and mounted upon a reciprocating carriage, and mechanism for reciprocating said carriage, substantially as and for the purpose set forth.

3. In a cigarette-machine, the combination of a distributing, packing, and discharging screw, and a stationary shell having a hopper, with a split tube containing a wrapper and mounted on a traveling carriage, and mechanism for intermittently operating the screw and reciprocating the carriage, substantially as shown and described.

4. In a cigarette-machine, the combination of a distributing, packing, and discharging screw, and a stationary shell having a hopper, with a split tube containing a wrapper, a carriage on which the said tube is mounted, a friction-roller attached to the said carriage, and a spiral cam operating on the said friction-roller, substantially as shown and described.

5. In a cigarette-machine, the combination of a split tube containing a wrapper and a carriage on which the said tube is mounted, and mechanism for reciprocating said carriage, with the folding device P , substantially as described, for folding the ends of the wrapper automatically, as set forth.

6. In a cigarette-machine, the combination of a split tube containing a wrapper and a carriage on which the said tube is mounted, and mechanism for reciprocating said carriage, with the folding-blocks U and the folding-blades W' , operated automatically, substantially as shown and described.

7. In a cigarette-machine, the combination of the stationary tube L and the split tube S with the rolling and stamping device M , for feeding the cut wrapper between the said tubes, substantially as shown and described.

8. In a cigarette-machine, the combination of the stationary tube L and the split tube S with the segmental arm M^2 and the rubber stamp M^3 , secured to the said arm M^2 , substantially as shown and described.

9. In a cigarette-machine, the combination of the stationary tube L and the split tube S with the segmental arm M^2 , the rubber stamp M^3 , secured to the said arm M^2 , and the adjustable ink-roller M^4 , substantially as shown and described.

10. In a cigarette-machine, the combination of the stationary tube L and the split tube S with the segmental arm M^2 , the rubber stamp M^3 , and the tension device consisting of the spring M^5 , the guide M^6 , and the set-screw M^7 , substantially as shown and described.

11. In a cigarette-machine, the combination of the stationary tube L, the split tube S, and the glass plate M' with the segmental arm M², provided with a rubber stamp, M³, and the cam shaft H, substantially as shown and described.
12. In a cigarette-machine, the combination of the stationary knife O and the pivoted knife O' with the spring-rod O² and the crank arm O⁶, attached to the cam shaft H, substantially as shown and described.
13. In a cigarette-machine, the combination of the guides N' and the glass plate M' with the cutting mechanism N O O' and mechanism for operating the same, substantially as shown and described.
14. In a cigarette-machine, the combination of the guides N', the glass plate M', and the knives O and O' with the rod O², the tube O³, the spring O⁴, and the cam O⁵ on the said rod O², which cam is operated by the crank-arm O⁶, fastened to the cam-shaft H, substantially as shown and described.
15. In a cigarette-machine, the combination of the split tube S and the carriage Q, on which the said tube S is mounted, with the folding-block U, the folding-blades W', and a device, substantially as described, for operating the said blocks and blades, as set forth.
16. In a cigarette-machine, the reciprocating carriage Q, having a tube, S, the folding-blocks U, the trunnions U', and the pins U⁴ on the said trunnions U', in combination with the spring-shafts V', the pins V, attached to the said shafts V', and mechanism for reciprocating the carriage, substantially as shown and described.
17. In a cigarette-machine, the reciprocating carriage Q, having a tube, S, the folding-blocks U, the trunnions U' and U², the pins U⁴, and the spring U³, in combination with the spring-shafts V', the pins V, and mechanism for reciprocating the carriage, substantially as shown and described.
18. In a cigarette-machine, the reciprocating carriage Q, having a tube, S, the folding-blocks U, the trunnions U' and U², the pins U⁴, and the spring U³, in combination with the pins V, the shafts V', the coil-springs V² on the said shafts V', the arm V³, the stop-pins V⁴, and mechanism for reciprocating the carriage, substantially as shown and described.
19. In a cigarette-machine, the reciprocating carriage Q, having a tube, S, the shafts W, the folding-blades W', and the pinions W², in combination with the racks W³ and W⁴ and mechanism for reciprocating the carriage, substantially as shown and described.
20. In a cigarette-machine, the reciprocating carriage having the split tube S and the spring P', in combination with the stationary tube L, the screw part D⁴ of the shaft D, and mechanism for reciprocating the carriage, substantially as shown and described.
21. In a cigarette-machine, a split tube, S, the carriage Q, having the friction-roller Q', the cam R, and the spring P', in combination with the fixed tube L and the screw part of the shaft D, substantially as shown and described.
22. In a cigarette-machine, the fly-wheel C, the clutch-plate J², spring J³, the pin J', the shaft J, and the hollow shaft D, carrying screw D², in combination with the train of gear-wheels C', F, F², and G, the segmental cam G', and the lever I, substantially as shown and described.
23. In a cigarette-machine, the gear-wheel G, connected by a train of gear-wheels with the fly-wheel C, the segmental cam G', and the cam-shaft H, in combination with the lever I, the shaft J, the clutch-plate J², spring J³, and the hollow shaft D, carrying screw D², substantially as shown and described.
24. In a cigarette-machine, the lever I, the shaft J, the clutch-plate J², and the spring J³, in combination with the fly-wheel C and the hollow shaft D, carrying screw D², and mechanism for vibrating lever I, substantially as shown and described.

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Witnesses:

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E. M. CLARK.