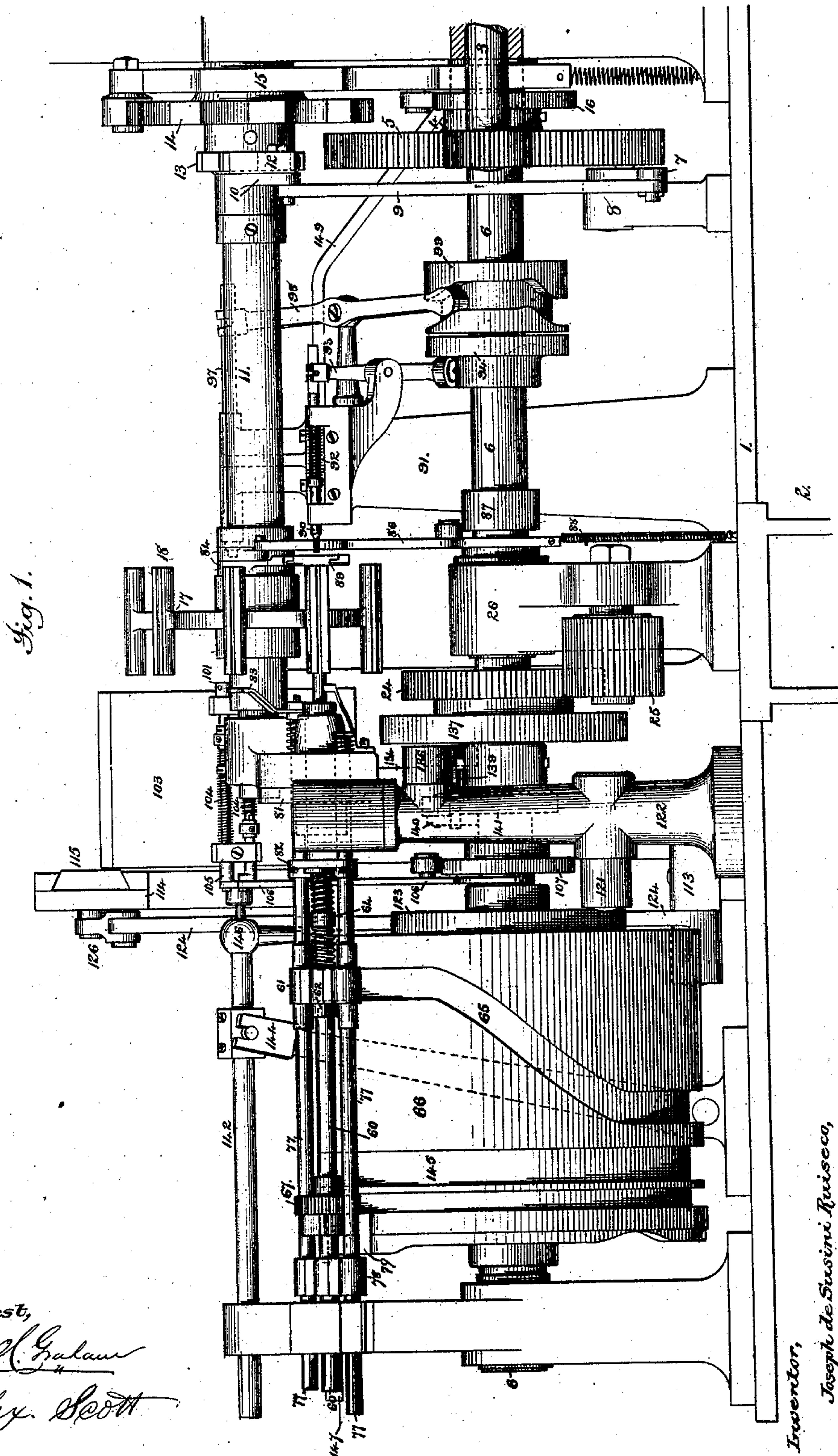


J. de SUSINI-RUISECO.  
Cigarette-Machine.

No. 224,967.

Patented Feb. 24, 1880.



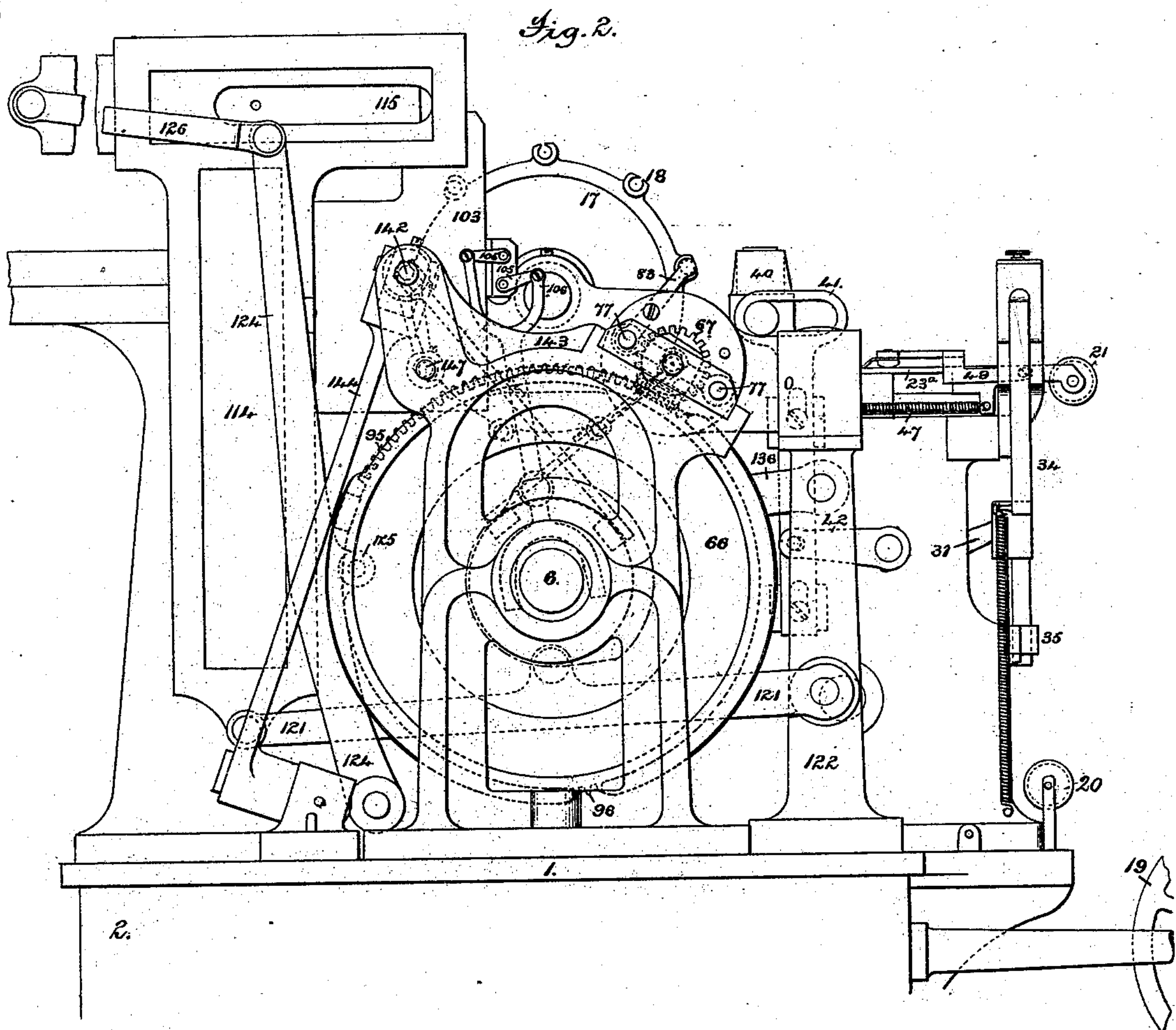
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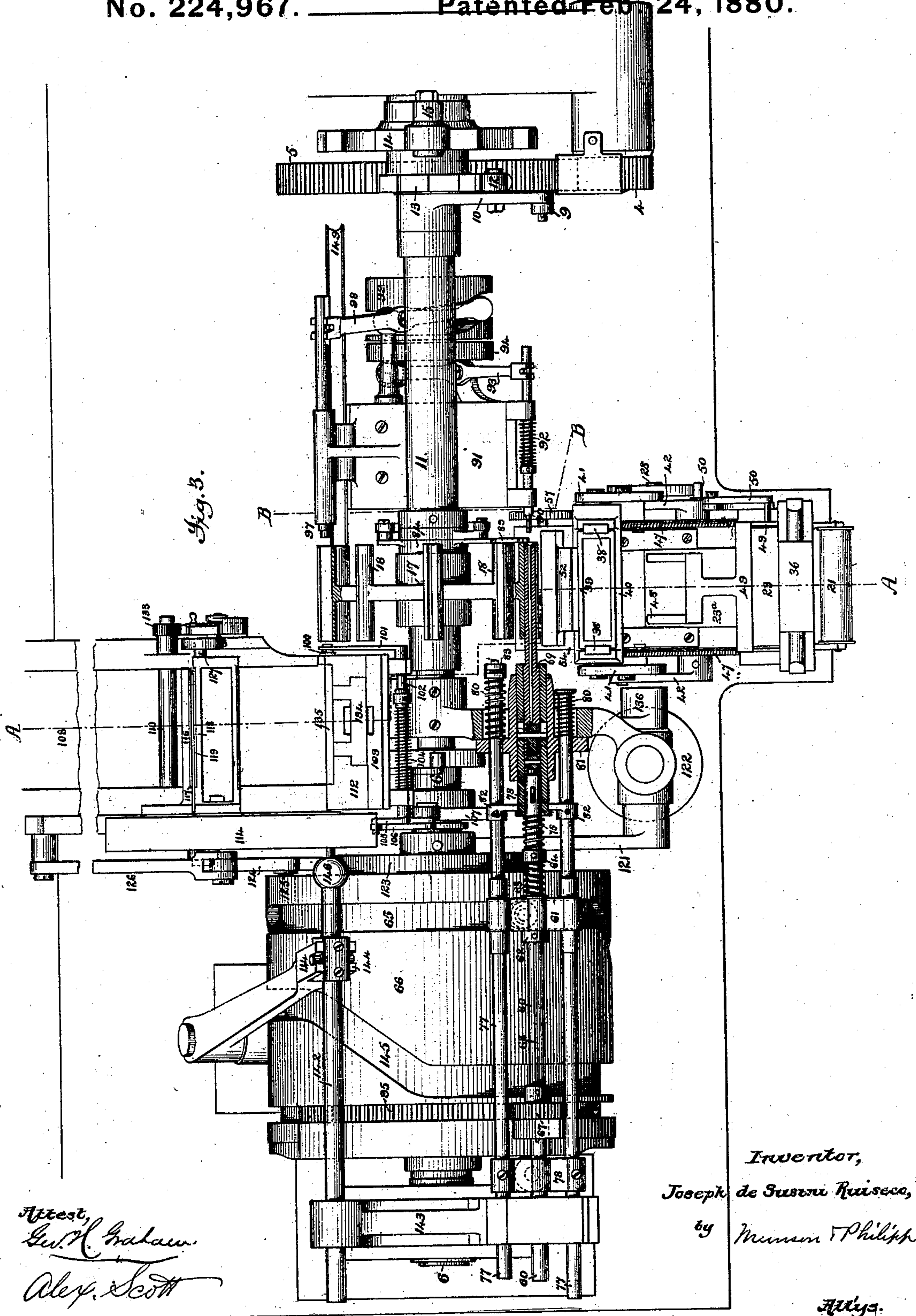
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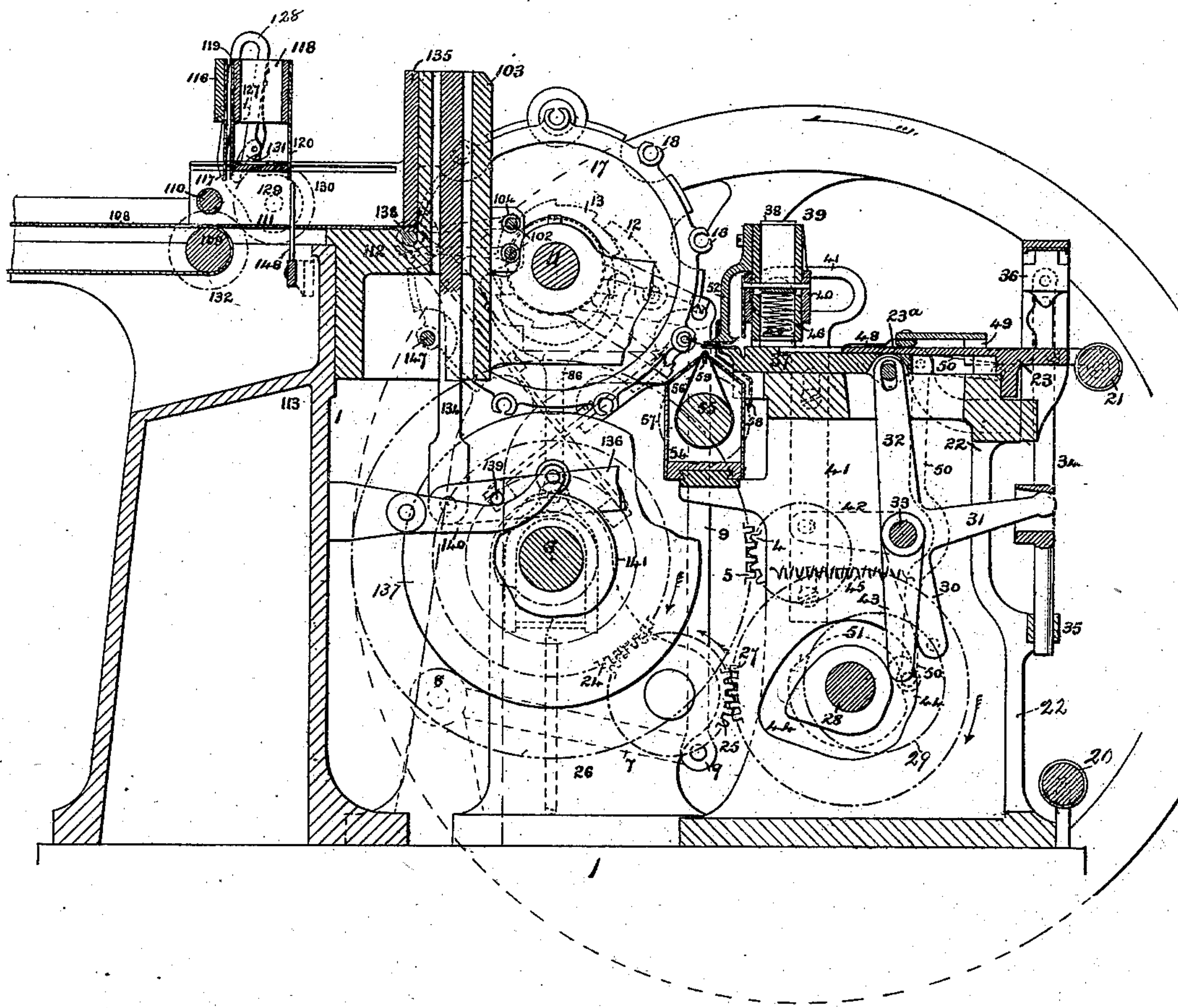
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6 Sheets—Sheet 4.

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Fig. 4.



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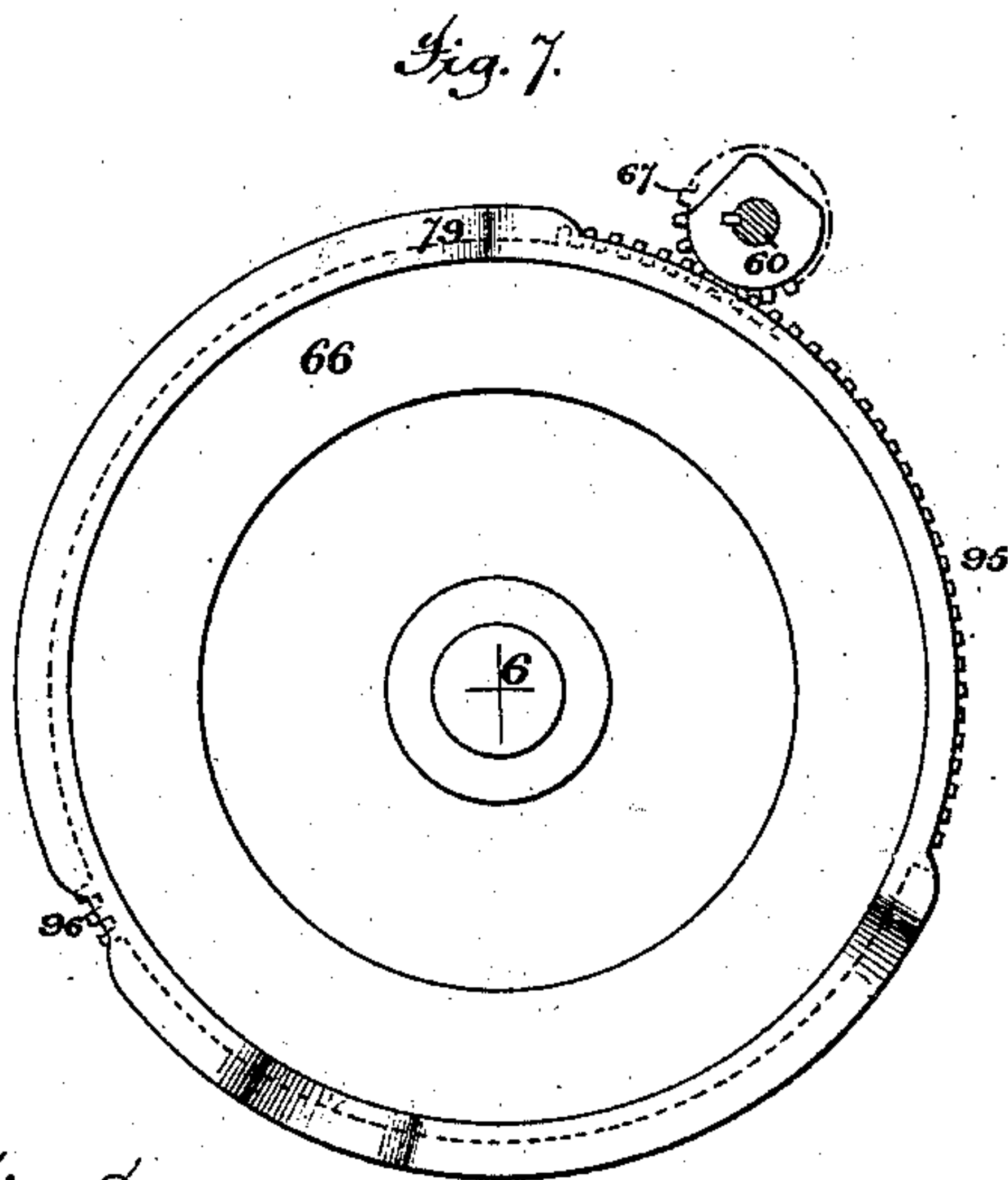
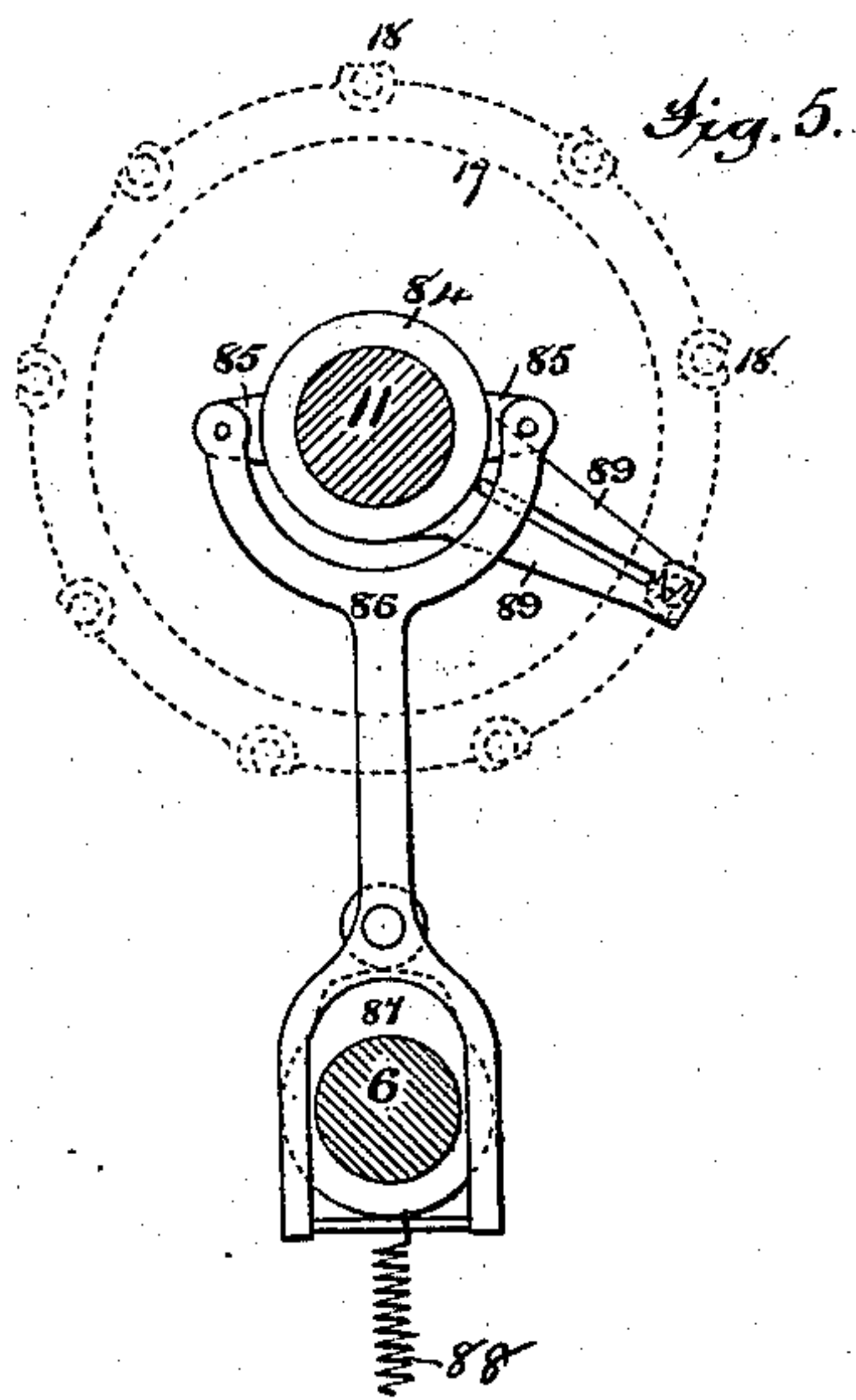
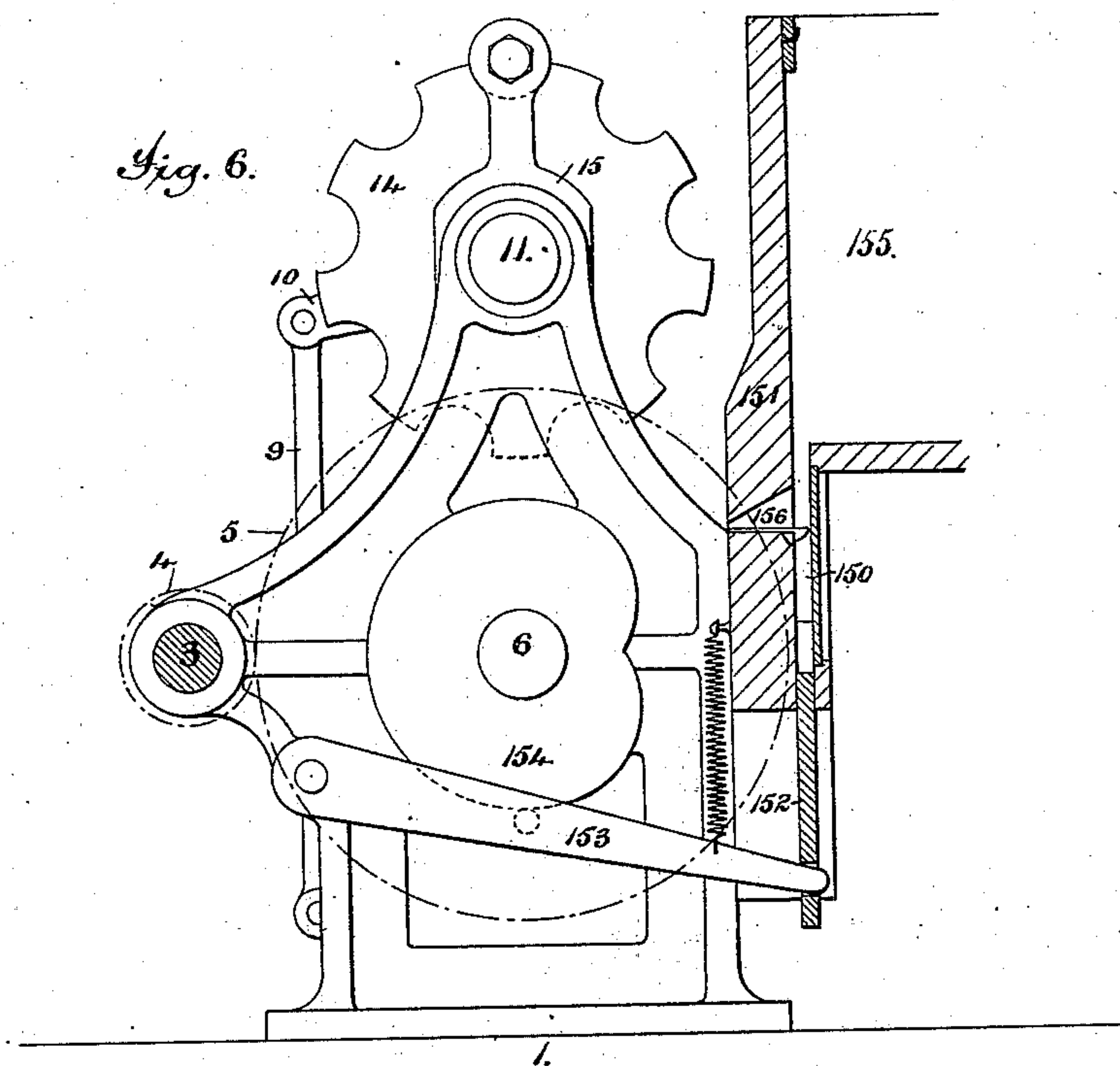


Fig. 8.



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Fig. 11.

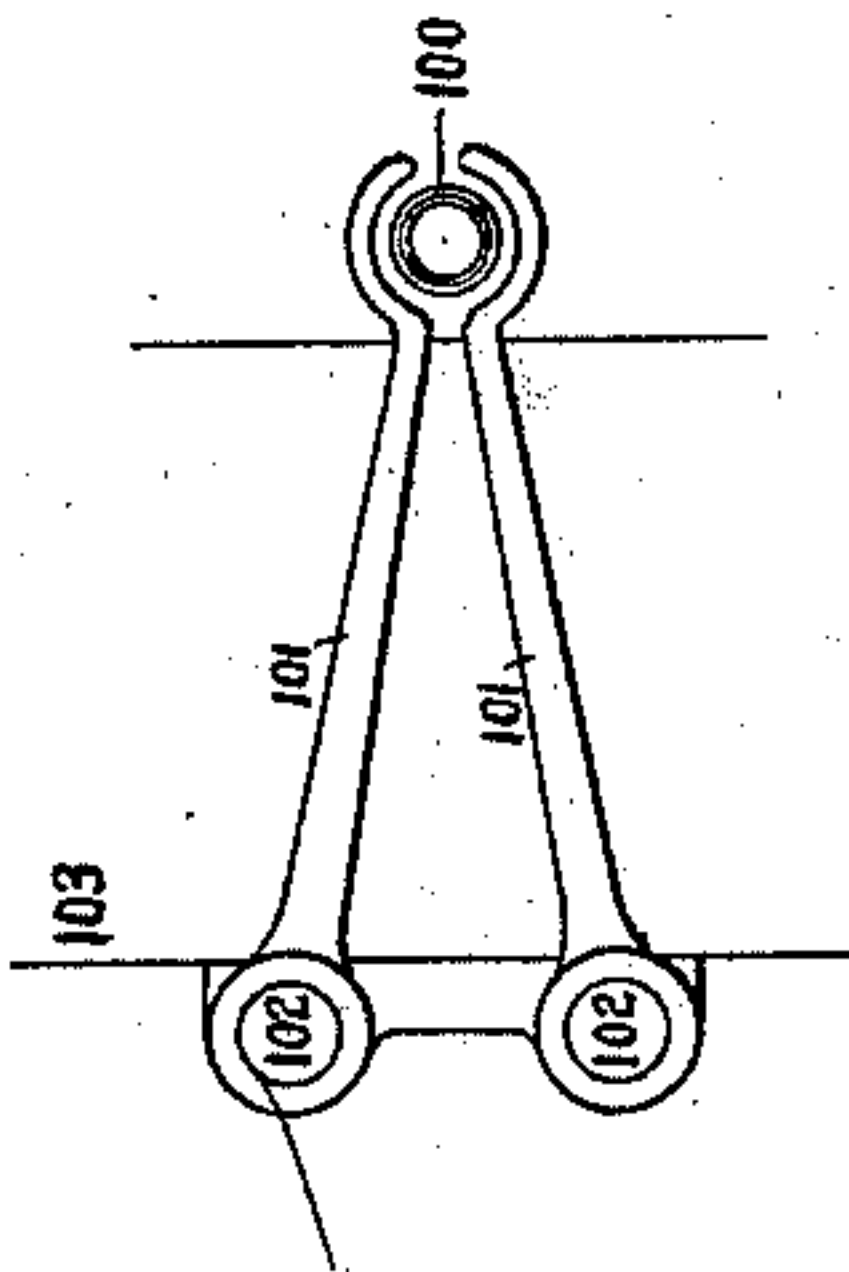


Fig. 10.

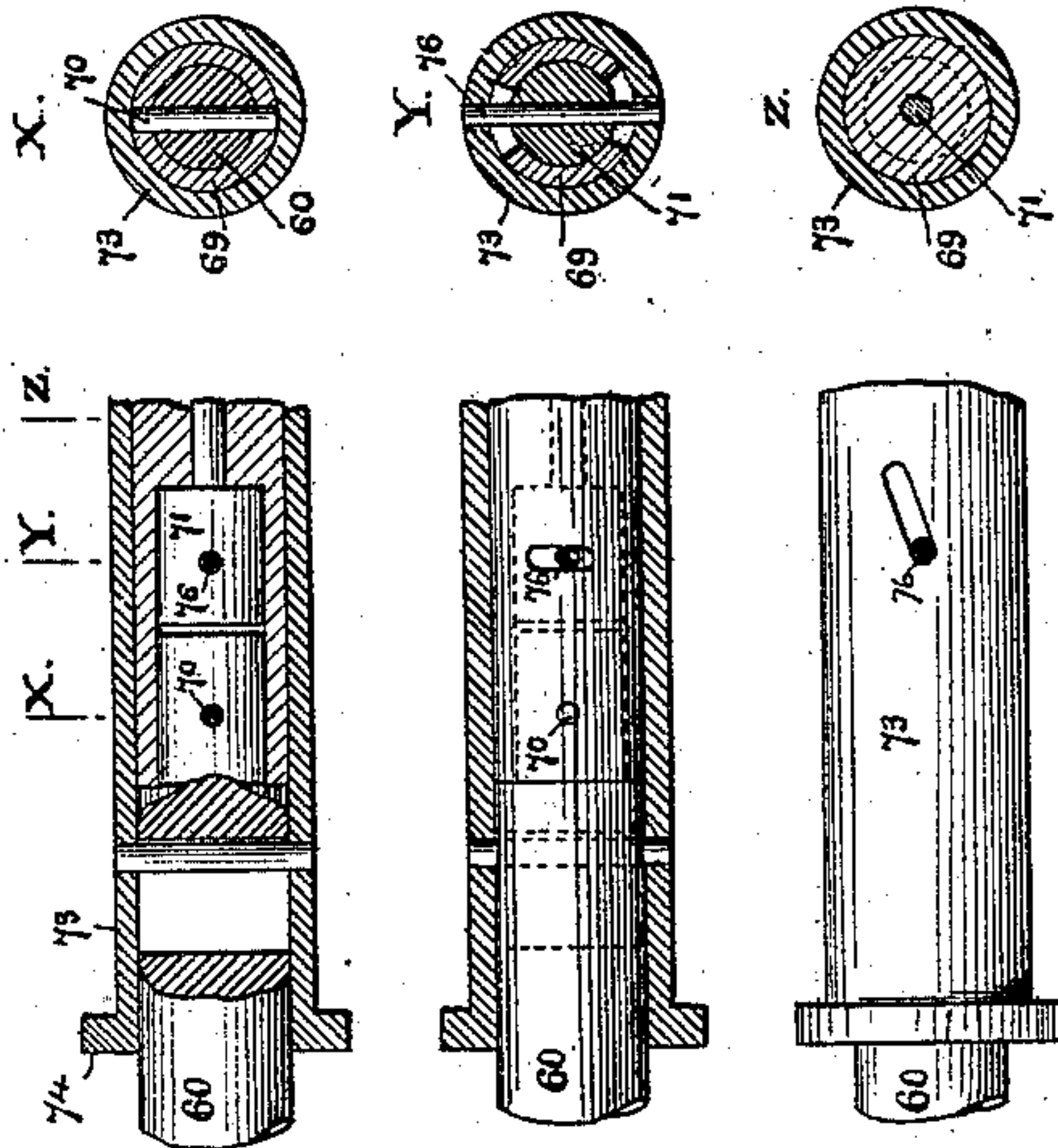
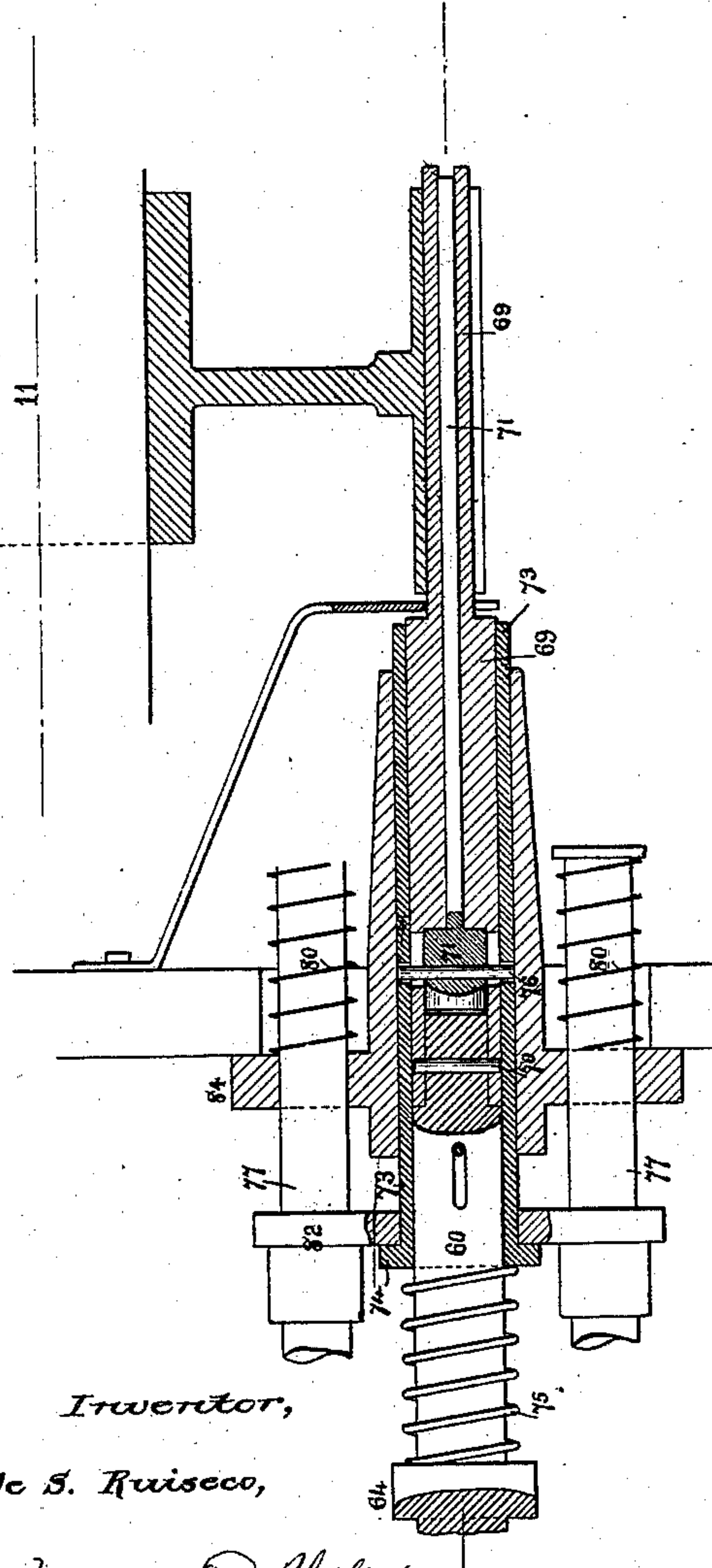
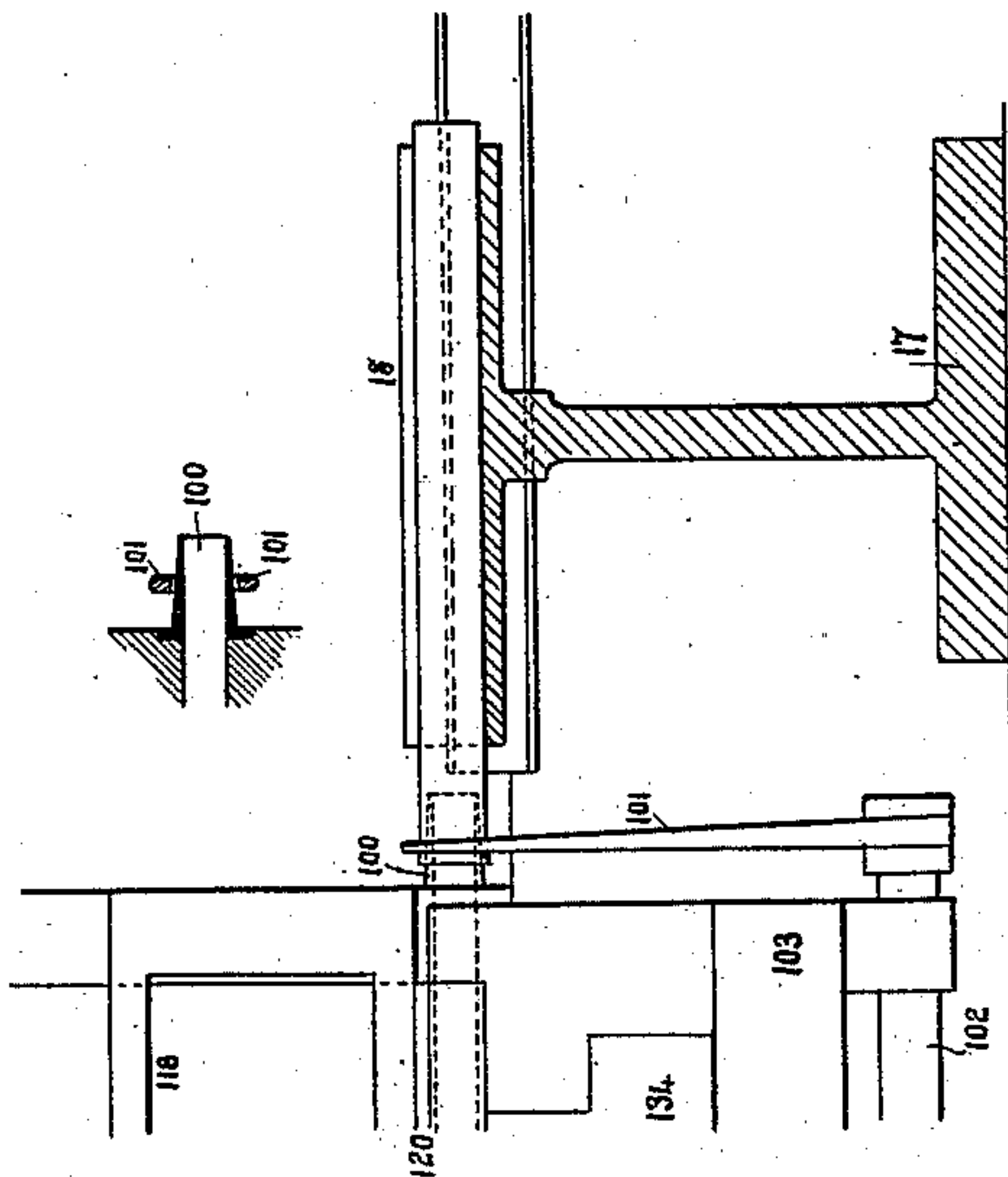


Fig. 9.



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# UNITED STATES PATENT OFFICE.

COUNT JOSEPH DE SUSINI-RUISÉCO AND DE CASTEL-ANGELI, OF PARIS,  
FRANCE, ASSIGNOR TO FRANCIS S. KINNEY, OF NEW YORK, N. Y.

## CIGARETTE-MACHINE.

SPECIFICATION forming part of Letters Patent No. 224,967, dated February 24, 1880.

Application filed February 5, 1879.

*To all whom it may concern:*

Be it known that I, COUNT JOSEPH DE SUSINI-RUISÉCO AND DE CASTEL-ANGELI, of 15 rue de Clichy, Paris, in the Republic of France, have  
5 invented certain new and useful Improvements in Machines for Making Cigarettes; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to  
10 which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to machinery for making different kinds of cigarettes—for instance, those known as “English,” which are gummed and have the ends open, and made of tobacco or other smoking material; those known as  
15 “French,” which are gummed, open at one end, folded or twisted at the other, and are made of tobacco or other smoking material.

The making of cigarettes on my improved machine is divided into several distinct and independent operations in such manner that  
25 by one revolution of the cam-shaft all these separate operations are performed, one for every cigarette, so that as many or more cigarettes are in the act of being made as there are different operations executed by the revolution of the cam-shaft. Some parts of this  
30 machine are found in my English Patent No. 3,852 for the year 1874. For instance, for making what are known as “French” cigarettes there are required the following operations:  
35 First, the stamping of the paper; second, cutting the paper and feeding forward to the place where it is wound into a tube; third, winding the paper into the shape of a tube and closing one end; fourth, filling the tube with tobacco;  
40 fifth, pushing the made cigarette into a trough, from where it descends by gravity into a narrow rectangular space; sixth, pushing the cigarette from the latter place upward into a case.

45 To describe my invention more fully, I will refer to the accompanying drawings, in which—

Figure 1 is a general side elevation of the machine. Fig. 2 is an end elevation of the entire machine, except the paper feeding and  
50 cutting device. Fig. 3 is a plan of some of the

parts, several details being shown in section. Fig. 4 is a section on the broken line *a a*, Fig. 3. Fig. 5 is a transverse section on the line *b b*, Fig. 3, showing some of the details. Fig. 6 is an end elevation of some parts, partly in section. Fig. 7 shows a detail, partly in section. Fig. 8 shows a detail in section on a larger scale. Fig. 9 is a view, partly in section and partly in elevation, of the wheel and its molds or tubes, part of the mechanism for winding  
55 up the paper, together with a hollow conical projection forming a continuation of the passage through which the tobacco is inserted into the paper tube, and nippers to hold the latter on said conical projection. Fig. 10 represents, partly in plan and partly in section, part of the mechanism for winding up the paper into tubes. Fig. 11 is a side elevation, partly in section, of the nippers and hollow conical projection.  
60  
65  
70

The general arrangement and operation of the machine are as follows:

The bearings of the shafts and the supports for the different parts of the mechanism are secured to a bed-plate, 1, resting on legs 2. Motion is imparted to the main shaft 3, which carries loose and fast pulleys, a fly-wheel, and a pinion, 4, from any convenient motor by a belt. (Not represented.) The pinion 4 engages with a gear-wheel, 5, mounted on the  
75 shaft 6. This latter shaft carries all the means for operating the different parts of the mechanism.  
80

In the face of the gear-wheel 5 is cut a cam, which, through a friction-roller engaged therein, imparts motion to a lever, 7, turning on the support 8, and connected by a rod, 9, to the lever 10, which latter turns loosely on the shaft 11 and carries a pawl, 12. This pawl 12 causes the shaft 11, by means of a ratchet-wheel, 13, firmly set on the latter, to make one-ninth of a revolution at every revolution of the shaft 6. A notched wheel, 14, which forms a part of the ratchet-wheel 13, and in which engages a friction-roller mounted on the piece 15, serves  
85 to keep the shaft 11 in exactly the position in which it has been placed by the pawl and ratchet-wheel until the further revolution of the shaft 6 compels the shaft 11 to make a further ninth of a revolution, when the piece 15  
90  
95  
100



is lifted by the cam 16 on the shaft 6 to allow that motion. At the moment this motion is finished a spring acting on the piece 15 again engages the roller carried on the latter with the notched wheel 14 on the shaft 11, to hold the latter in position until the shaft 6 has completed its revolution.

On the shaft 11 is mounted a wheel, 17, which carries on its periphery what I term the "molds" for the cigarettes—that is to say, tubes 18—in which the paper is introduced, wound up, and filled—in one word, in which the cigarette is made. These tubes, nine in number, equidistant from each other and from the center of the wheel 17, are formed with a slot along their entire length to admit the introduction of the paper. At every ninth of a revolution of the shaft 11 these molds are successively presented at the place where one of the above-mentioned operations takes place, and I will now describe these operations in their proper order. The paper is wound up on a roll, 19, (see Fig. 2,) mounted in bearings extending from the frame 1. It passes over two rolls, 20 and 21, Fig. 4, mounted on the standard 22, and from the roll 21 it is drawn over the table 23, which is secured to and forms part of the standard 22. On the shaft 6 is mounted a gear-wheel, 24, which, through an intermediate wheel, 25, turning on a stud in the bearing 26, imparts motion to a gear-wheel, 27, on the shaft 28. The wheels 27 24 are exactly alike, so that one revolution of the latter causes the wheel 27 to make also one complete revolution. On the shaft 28 is mounted a cam, 29, acting on the arm 30 of the three-armed lever 30 31 32, which turns loosely on the shaft 33. The arm 31 of the lever 30 31 32 acts on the sliding piece 34, one end of which is guided in the cross-bar 35, mounted on the bearing 22, while the two branches of its other forked end control the position of the stamp-carrier 36. This stamp-carrier is constructed in the well-known manner of the ordinary self-inking stamping devices, and I do not deem it necessary to give a detailed description of the same. It suffices to say that it is depressed to effect the stamping of the paper by the action of the cam 29 on the lever 30 31 32, and that it is returned to its original position by a spring, the cam 29 allowing for this motion.

The casting 22 carries a slide, 37, from each side of which extend two uprights, 33 38, which serve as guides for the rectangular pieces 39 40, the first one of which, 39, serves as a clamp to hold the paper fast while it is being cut and fed forward, while the other, 40, carries the knife which cuts the paper. The rollers mounted on each side of the piece 40 engage in horizontal slots of the sliding pieces 41 41, which receive an up-and-down motion through the levers 42, mounted on the shaft 33, to which is imparted a rocking motion by the arm 43, attached to shaft 33, acted upon through the cam 44 on the shaft 28 in one direction, and through a suitably-placed spring, 45, in the

other direction. Springs 46, placed in the interior of the pieces 39 40, as represented, exert a constant tendency to hold the lower face of the clamp 39 at a lower level than the edge of the knife carried on the piece 40. It follows that, if the sliding pieces 41 are depressed by the action of the cam 44 on the arms 43 42 of the shaft 33, the piece 39 will be first brought down to hold the paper firmly between itself and the slide 37. Then, the action of the cam 44 on the arms 43 42 being continued, the knife-carrying piece 40 will continue to descend to sever the paper. While the cam 44 still holds the clamp 39 and the knife-frame 40 depressed, the cam 29, acting on the lever 30 31 32, the arm 32 of which controls the position of the slide 37, pushes the latter forward to present the edge of the paper which has just been cut to the nippers, which have at this moment taken their position in the interior of one of the molds 18 of the wheel 17. As soon as the nippers are closed to firmly hold the last paper cut the depression in the cam 44 permits the spring 45, attached to the arm 43 on the shaft 33, to raise the sliding pieces 41 41, and thus to lift the clamp 39 and the knife-frame 40 from the slide 37, whereby the cut paper, as well as that part of the paper strip which has been drawn along by the clamp 39, are liberated. Now, the continued revolution of the cam 29 permits the springs 47 to draw back the slide 37, at the same time causing the stamp 36 to make another impression.

During the return motion of the slide the paper is held in the position in which it has been brought by the forward motion of the slide by one or more flat springs, 48, carried on a swinging piece, 49, which hold it with sufficient force between themselves and a lip, 23<sup>a</sup>, extending forward from the table 23 on the support 22, in a central depression made for the purpose in the slide 37. The position of the swinging piece 49 is controlled by two levers, 50, acted upon by cams 51 on the shaft 28 in such manner that the cams 51 cause the levers 50 to raise the springs 48 away from the paper when the latter is being drawn forward, as above described, and allow the springs 48 to rest by the gravity of the swinging piece 49 on the paper and hold it in the position which it has assumed by the forward motion of the slide 37 during the period when the latter moves backward.

To allow the clamp 39 to press both upon the end of the paper strip behind the knife and also upon the paper which has been cut by the descent of the knife-frame 40, the clamp 39 is made higher than the latter, and a bent piece, 52, is bolted to it, which reaches over the knife-frame and descends in front of the latter to exactly the same extent as the main body of the clamp.

On the table 53, extending from the casting 22, is, by means of dovetails, supported the removable paste-vessel 54, in which is mounted a roller, 55, over which passes an endless band,



56. The shaft of the roller extends on one side through the wall of the vessel, and carries a ratchet-wheel, 57. This ratchet-wheel, and consequently the roller 55, is turned a little at every descent of the clamp 39 by a spring-pawl, 58, extending downward from the latter. A metal strip, 59, over which the band passes, extends parallel with the axis of the roller from one side to the other of the paste-vessel at a height nearly the same as the upper surface of the slide 37.

The mechanism which effects the rolling of the paper in the mold of the wheel is so arranged that the paper is turned upward when it commences to leave the surface of the slide 37, and consequently when its farther edge is liberated from the latter, it has a tendency to extend downward in the line of the tangent drawn from the upper edge of the slot in the mold. In making this motion of turning downward into the tangent the edge of the paper along its entire length strikes upon and has to pass over the moistened band 56, thus receiving a sufficient quantity of paste to secure a strong adhesion on the part which is already wound up.

The mechanism for winding up the paper (see Figs. 3, 9, 10, and 12) consists, principally, of a rod, 60, to which a longitudinal motion is imparted by a friction-roller mounted on the cross-piece 61, and held in position on the rod by means of a fixed collar, 62, on one side, and a spring, 63, abutting against a fixed collar, 64, on the other. The roller fixed to the piece 61 works in the cam-groove 65 on the periphery of the drum 66, fixed on the shaft 6, while the rod 60 receives an intermittent rotatory motion through a small gear-wheel, 67, feathered to it and gearing into segments of gear-wheel formed on the drum 66. These segments of gear-wheels are of somewhat smaller diameter than the general periphery of the drum 66—that is to say, the small gear-wheel 67 works in a groove of the drum, its faces applying on the sides of that groove, so that it is firmly held against end motion, while the long groove 68 on the rod 60, in which the feather is engaged, allows liberally for the end motion of that rod.

The hub of the wheel 67 is cut away, as represented in Fig. 7, and on the periphery of the drum 66 are formed raised portions, as shown, to prevent any accidental turning of the wheel during the time when it is not engaged in the segments.

The rod 60 carries a hollow extension, 69, firmly fixed to it by means of the pin 70, Figs. 3 and 9, and forming a part thereof. This extension or tube is formed with a slot along its entire length. A part of it corresponding to the length of the paper which is to form the cover of the cigarette, measured from its free end toward the rod 60, is reduced in diameter to have just sufficient play in the molds 18 of the wheel 17 to allow for the thickness of the paper to be wound thereon, while the inside

diameter of this tube, at the end which is connected to the rod 60, is enlarged to admit the head of the central pin, 71, which is formed with a ridge, 72, (see Fig. 8,) applying in the slot of the tube 69, but of less width than this slot. It follows that the central pin, 71, is prevented from an endwise motion independently from the rod 60 and its extension, while a limited rocking motion independently from the latter parts can be imparted to it by the following means: A tube, 73, provided with a flange, 74, on which acts a spiral spring, 75, encircling the rod 60 and abutting against the collar 64 fixed thereon, is feathered to the rod 60, so as to allow a short independent end motion of the tube, but compelling it to turn with the rod. This tube is formed with two short inclined slots opposite to each other, in which works a pin, 76, firmly set in the head of the central pin or spindle, 71, and extending through slots in the extension 69 of the rod 60. Consequently an end motion imparted to the tube 73 must cause the central spindle, 71, to make so great a part of a revolution as the difference between the width of its ridge 72 and the slot of the extension 69 permits.

Two rods, 77 77, are arranged at opposite sides of the rod 60, parallel thereto, and connected with each other by a cross-piece, 78, through which the rod 60 plays loosely. The cross-piece 78 carries a friction-roller, which works against a cam, 79, on the face of the drum, and is constantly held in contact therewith by means of the springs 80, acting on the flange at the ends of the rods 77 and finding an abutment on the casting 81, which serves as a guide for the rods 60 77 77. Another cross-piece, 82, firmly fixed to the rods 77 77, embraces the tube 73, and acts under certain conditions against the flange 74 of the latter in opposition to the spring 75.

An arm, 83, is secured to the end of one of the rods 77, to push the paper tube which has been made at the last revolution of the machine a little inward in its mold, so as to bring its end about flush with the end of the mold.

The folding of one end of the paper tube is done at the same time when the tube is being made, or, more properly said, when it is nearly finished. It is effected by the following means: Two collars, 84 84, are loosely mounted on the shaft 11, each carrying an arm, 85, extending horizontally, or nearly so, in opposite directions. To these arms 85 85 are connected the branches of a forked piece, 86, which receives an intermittent up-and-down motion from the cam 87 on the shaft 6, with which it is held in contact by the spring 88. Thereby a rocking motion in opposite directions is imparted to the collars 84 84, from which extend the folders 89 89. The ends of the latter are formed with rectangular notches, and are made to overlap each other, so that when entirely closed there is only a very small space left through which the end of the paper tube may extend.



The parts are so arranged that the paper tube is still turning when the folders 89 close together, thus producing a twisted end.

A striker, 90, supported in bearings on the upright 91, to which an end motion is imparted in one direction by the coiled spring 92 and in the other direction by the lever 93, turning on an extension of the upright 91 and operated upon by the cam 94 on the shaft 6, serves to firmly close the fold by pushing the protruding end of the paper tube out of the space left open between the folders, and compressing it between itself and the end of the central spindle, 71.

The operation of these parts is as follows: Supposing that the cam 65 on the drum 66 has brought the rod 60 forward, so that the slotted extension 69 and the central spindle, 71, are fully introduced in one of the molds 18 of the wheel 17, the tube 73, acted upon solely by the spring 75, is in such position that its inclined slots hold, by means of the pin 76 passing through the head of the central spindle, 71, the latter in such position that an open space between the ridge of the central spindle, 71, and the side of the slot in the extension 69 of the rod 60, in which slot the ridge 72 applies, is presented at exactly the proper height to receive the edge of the paper which is at this moment being fed forward. As soon as the edge of the cut paper has entered the slot and the clamp 39 commences to rise, thereby liberating the paper, the cam 79 on the face of the drum 66 draws the rods 77 77, and with them the cross-piece 82, firmly fixed thereto, a little backward. The cross-piece 82, in its backward motion, acts on the flange 74 of the tube 73, thus pushing the latter also backward to a small extent, whereby, through the inclined slots in the latter and the pin 76, the central spindle, 71, is turned sufficiently to firmly gripe the edge of the paper between its ridge and the side of the slot in the piece 69. As soon as the paper is thus held the large segment 95 commences to turn through the gear-wheel 67, the rod 60, and consequently the tube 73, extension 69, and central spindle, 71, the tube 73 still being held back in opposition to the force of the spring 75 by the cross-piece 82. The revolution of the rod 60 is continued until the paper is entirely wound up on the extension 69 and its end closed by the folders 89 89 and striker 90, as above described. The spring 63, which holds the cross-piece 61, controlling the lengthwise position of the rod 60, against the collar 62, is interposed, instead of rigidly connecting the cross-piece 61 to the rod 60, in order to soften the shock which the parts would have to sustain by the striking of the pin 90, which finally closes the fold this piece being forced forward by the spring 92, while its backward motion is effected through the cam 94. When the paper tube is completely formed and its end closed, a deep depression in the cam 79 on the face of the drum allows the spring 80 to push the bars

77 77, with the cross-piece 82, forward, thus liberating the tube 73, which will follow the motion of the cross-piece 82, and thus turn the central spindle, 71, in the other direction, whereby the edge of the paper, which has been held fast by the ridge of the latter, is liberated. The same forward motion of the rods causes the arm 83, carried at the end of one of them, to push the paper tube which has been made just before this last one a little forward in its mold, so that its end comes about flush with the end of the mold. This done, the cam 79 compels the rods 77 77 to return to their original position—that is to say, so far that the cross-piece 82 does not yet act on the flange 74 of the tube 73, but that the arm 83 is brought out of the way of the protruding end of the just-made paper tube—when the wheel 17 makes one-ninth of a revolution. At the same time the cam 65 on the drum 66 brings back the rod 60 and its accessories, so that the slotted extension 69 and central spindle, 71, are entirely liberated from the mold, whereupon the wheel 17 is caused, in the above-described manner, to move one step. The small segment 96, consisting of only a few teeth, turns the rod 60 sufficiently to bring the slot of the extension 69 in proper position to receive the edge of a new paper, the rod is moved forward again by the cam 65, and the operation may be repeated.

The paper tube in its mold is carried along by the wheel 17 at every step made by the latter until it comes opposite the place where the tobacco is compressed to be filled there. When in this position its closed end is struck by the rod 97, supported in the upright 91, and moved endwise by the lever 98 and cam 99 on the shaft 6. A hollow conical projection, 100, extends sidewise from the metal frame in which the tobacco is compressed, forming the continuation of the passage through which the tobacco is inserted into the paper tube. When the latter is struck and pushed by the rod 97 its open end is caused to pass a short distance over the slightly-conical projection 100. At this moment two nippers, 101, of the form represented, the ends of which are preferably covered with a thin layer of rubber, close upon the projection 100 and the end of the paper tube, confining the latter elastically, but still with sufficient force, in the position in which it has been brought by the rod 97.

The nippers 101 are mounted on two short rockingshafts, 102, supported in suitable bearings on the casting 103. They are turned forcibly in one direction—that whereby the nippers are closed—by coiled springs 104 encircling them, and having one end secured to the shafts, while the other is secured to the framing. In the other direction, for opening the nippers, they are turned by arms 105, extending in opposite directions from the shafts 102, and acted upon through the forked piece 106 by the cam 107 on the shaft 6.

The tobacco is fed forward and introduced



in the paper tube by the following means: It is either by machinery or by hand placed and evenly distributed on the endless band 108 to the supporting-roller 109, to which an intermittent rotary motion is imparted by a pawl, as will be described farther on. From the band 108, between the roller 109 and pressure-roller 110, it is delivered on the table 111, fixed on the casting 112, supported on the standard 113. This standard carries a vertical slide, 114, and at the top of the latter is arranged a horizontal slide, 115. From the vertical slide extends a piece, 116, which carries a thin plate, 117, extending downward on the table 111 and serving as clamp when the tobacco is being cut. The horizontal slide 115 supports the piece 118, from which extends the knife 119 and the plate 120, which latter pushes the cut and partly-fed-forward tobacco into the passage, where it is compressed and from where it is pushed into the paper tube.

The slide 114 receives its up-and-down motion from the lever 121, turning on a stud in the standard 122, and operated upon through a friction-roller by the cam 123 in the face of the drum 66. The lever 124, turning on the fixed piece 113 and worked by the cam 125, also in the face of the drum 66, imparts through the connecting-rod 126 motion to the horizontal slide 115. The cams 123 125 are so set respectively to each other that the horizontal slide 115 does not move sidewise when the vertical slide 114 moves up or down.

A pin, 127, extending from the piece 118, which carries the knife 119 and the plate 120, works in a slot in the arm 128, which turns loosely on the fixed stud 129, on which turns the gear-wheel 130. This gear-wheel receives an intermittent motion from the pawl 131 on the swinging arm 128, and gears into the wheel 132, fixed on the shaft of the roller 109. From this roller the feed-motion is transmitted also to the pressure-roller 110 by means of the smaller gear-wheel 133 on the shaft of the latter.

In the casting 112 is arranged a vertical slide, 134, carrying the plate 135 on the face of the casting 112. The lower edge of this plate is formed with a semicircular groove, as represented, and serves not only to compress the tobacco to make it ready for being pushed into the paper tube, but it forms the upper part of the passage for the tobacco when it is in the act of being pushed. For these two purposes a double motion must be imparted to the slide 134, which is obtained in the following manner: The lever 136, turning on the standard 122 and controlled by the cam 137, which may form part of the above-mentioned gear-wheel 24, elevates the slide 134 at the proper moment to the full extent of its motion, to allow the introduction of the tobacco in the groove 138 of the casting 112, and depresses it again sufficiently to strongly compress the tobacco. This done, the tobacco is ready to be pushed into the paper tube, but it is yet too strongly

held by the slide 134 135. In order to raise the latter just sufficiently to let the tobacco slide along loosely, while the circular, or nearly circular, shape of the passage formed by the groove 138 in the casting 112 and the groove in the edge of the sliding plate 135 is retained, a pin, 139, is provided, extending from the lever 136, and resting on another lever, 140, which turns on a stud in the upright 113, and the position of which is controlled by the cam 141.

The pusher-rod 142, supported in the fixed part 143 of the framing and in the casting 112, receives its longitudinal motion from the lever 144, operated upon by the cam 145 on the periphery of the drum 66.

An arm, 146, extending from the pusher-rod 142, operates another rod, 147, placed below, which pushes the finished cigarettes out of the mold after the mold-wheel has made another ninth of a revolution.

The operation of these parts of the mechanism is as follows: The slide 114 is raised by the lever 121 and cam 123, taking with it the horizontal slide 115. This motion elevates the clamp 116 117, as well as the knife 119 and plate 120. Now, the horizontal slide 115 is moved outward with the knife 119 and plate 120. A rack, 148, connected with the vertical slide 114 and operating through holes in the table 111, has been raised with the slide 114 for the purpose of retaining the tobacco which has been cut previously and been pushed forward between the knife 119 and plate 120. The side motion of the slide 115 causes, through the pin 127, arm 128, pawl 131, and wheel 130, the feed-rollers 109 110 to turn, placing thus a sufficient quantity of tobacco on the table. Now, the slide 114, with the horizontal slide 115 and rack 148, descends, the tobacco is clamped, cut, and that portion of the tobacco which has been cut and partly moved by the knife 119 in the previous operation is now placed in front of the plate 120. Then the horizontal slide 115, carrying the knife 119 and plate 120, is moved forward by the lever 124 and connecting-rod 126 until the plate 120 comes up closely to the face of the vertical slide 135. During this motion the tobacco which has just been cut is pushed along by the knife 119, while the plate 120 pushes the tobacco cut in the previous operation forward into the groove, where it is compressed by the descent of the slide 134 135 by means of the lever 136 and cam 137. When the slide is brought down sufficiently to strongly compress the tobacco, the pin 139, extending from the lever 136, rests solidly on the lever 140, which now, by the cam 141, is raised a little, elevating the lever 136 and slide 134, whereby the excess of pressure exerted by the latter on the tobacco is relaxed. Now, the cam 145 and lever 144 act on the pusher-rod 142, which enters the passage 138 and pushes the tobacco into the paper-tube, which by this time is firmly held by the nippers 101 on the hollow trun-



cated cone 100. The forward motion of the pusher-rod 142 imparts, through the arm 146, a similar motion to the rod 147, which pushes the previously-finished cigarette out of its mold into the trough 149. At the moment when all the tobacco has entered the paper-tube the nippers 101 relax their hold and the last portion of the forward motion of the rod 142 pushes the cigarette backward to liberate it from the cone 100, and thus admit a further ninth of a revolution of the wheel 17 without injuring the end of the cigarette which has just been made. The trough 149 is inclined, as represented, and ends in a narrow space, 150, in the piece 151, attached to the framing, in which slides vertically a pusher, 152, operated by the lever 153 and cam 154. The cigarette falls on the upper face of the pusher 152, which presses it upward into the casing 155, removing on its way two springs, 156, which, as soon as the cigarette has passed, come back to their original position, thus supporting the cigarette, while the pusher 152 again descends to receive on its face a new one.

From the casing 155 the cigarettes may be removed by the attendant at intervals, to be put up in packages and made ready for sale.

Different kinds of cigarettes may be made on the machine by removing or changing the position of some of the parts. If it is desired, for instance, to make what are called "English" cigarettes it is simply necessary to disengage the folder-carrying collars 84 84 from the forked piece 86 and to slide them along a short distance on the shaft 11, so that they will not interfere with the paper which is being wound.

By removing the paste-vessel 54 from the dovetailed table 53, cigarettes can be made which are not gummed along the sides.

Many modifications may be made in the details without departing from the object of my invention.

Although in the body of specification I have always spoken of tobacco alone, it will be seen that other material may be used, such as sanitary herbs, &c.

The wheel 17 may carry a greater or smaller number of molds 18, so that more or less cigarettes are being made at one time than are shown here; but in every case the parts should be so arranged that the number of steps which the shaft is caused to make by the cam cut in the gear-wheel 5, lever 9, arm 10, pawl 12, and ratchet-wheel 13 to complete one revolution corresponds exactly to the number of molds on the wheel 17.

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

1. In a cigarette-machine, the combination and arrangement of the different devices for stamping, cutting, feeding, and rolling the paper, for feeding, separating, compressing, and pushing the tobacco into the paper tube, and for pushing the finished cigarette out of its

mold, all substantially as herein shown and described, and for the purposes set forth.

2. The mold-wheel 17 on the shaft 11, carrying the ratchet-wheel 13 and the notched wheel 14, in combination with the cam in the gear-wheel 5 on the shaft 6, operating the lever 9, the pawl 12, and with the cam 16 and forked piece 15, all constructed and operating substantially in the manner set forth.

3. The stamping device 36, operated by the cam 29 and lever 30 31 32, in combination with a paper-feeding device operated through the same means, substantially as set forth and shown.

4. The paper-clamp 39 and knife 40, held in position respectively to each other by the springs 46, and guided vertically on the slide by the uprights 38, in combination with the slide 37 and with the means 29 30 31 32 for imparting a horizontal motion to the latter, and means 44 43 42 41 for imparting vertical motion to the clamp and knife.

5. The removable gumming device 54, placed in such position that the edge of the paper, when liberated, is compelled to strike the exposed surface of the gum-carrying belt 56 along its entire edge, substantially as described, and for the purposes set forth.

6. The paper-rolling device, consisting, principally, of the parts 60 61 69 71 73, in combination with the folders 89 and striker 90, all operated by suitable means, substantially as shown and described, and for the purposes set forth.

7. The pusher-rod 97, in combination with hollow truncated cone 100, and with the spring pinchers or nippers 101, all operating substantially as described and shown, and for the purposes set forth.

8. The endless feeding-belt 108, supported on one side by the roller 109, to which motion is imparted by the pawl 131 and gear-wheel 130, and from which the pressure-roller 110 receives its motion, in combination with the table 111 and a suitable separating device, 117 119, substantially as and for the purposes set forth.

9. The clamp 117 on the vertical slide 114 and the separating-plate 119 and feeding-plate 120 on the horizontal slide 115, operating in the vertical slide 114, all arranged as shown, in combination with suitable operating means, substantially as and for the purposes set forth.

10. The slide 134 135, serving to compress the tobacco before it is pushed into the paper tube, and also to form a part of the passage for the tobacco when the latter is in the act of being pushed, in combination with the lever 136 and cam 137, through which the general reciprocating motion is imparted, and with the cam 141 and lever 140, serving to release the excess of pressure on the tobacco, as and for the purposes described.

11. The pusher-rod 142, operated by suitable means, in combination with the mold-wheel



17 and the hollow truncated cone 100 and the nippers 101 on rock-shafts 102, substantially as and for the purposes set forth.

5 12. The rod 147, operated by the rod 142, for discharging the cigarettes from their molds and delivering them into the trough 149, so that each following cigarette pushes the foregoing one along in the trough until it descends on the incline of the latter.

10 13. The slide 152, operating in the narrow

space 150, in combination with the casing 155 and supporting springs 156, and with suitable operating means, substantially as described, and for the purposes set forth.

COUNT JOSEPH DE SUSINI-RUISÉCO  
AND DE CASTEL-ANGELI.

Witnesses:

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