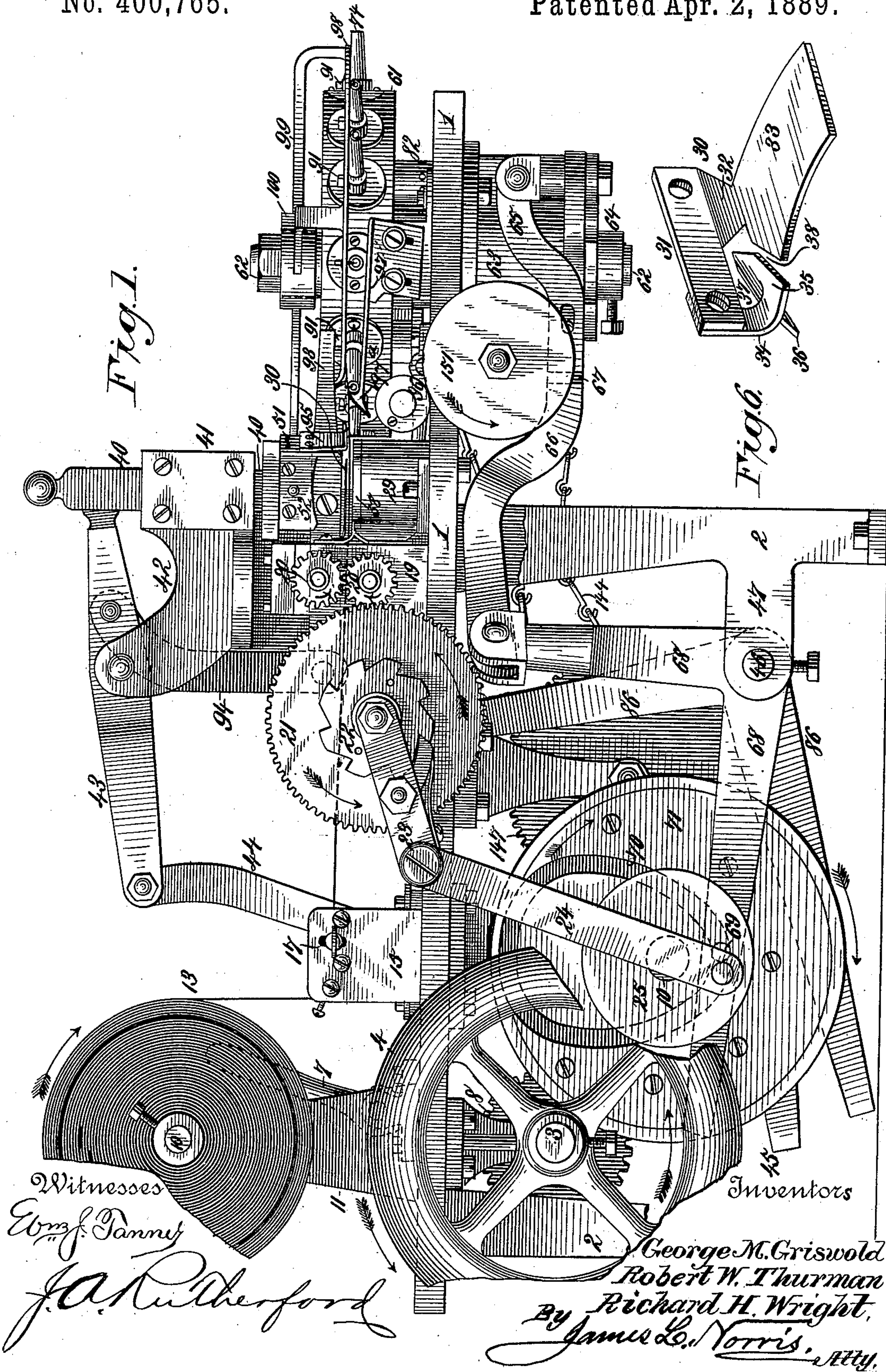


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8 Sheets—Sheet 1.

G. M. GRISWOLD, R. W. THURMAN & R. H. WRIGHT.  
MACHINE FOR MAKING CIGARETTE MOUTH PIECES OR PAPER TUBES.  
No. 400,765.

Patented Apr. 2, 1889.





(No Model.)

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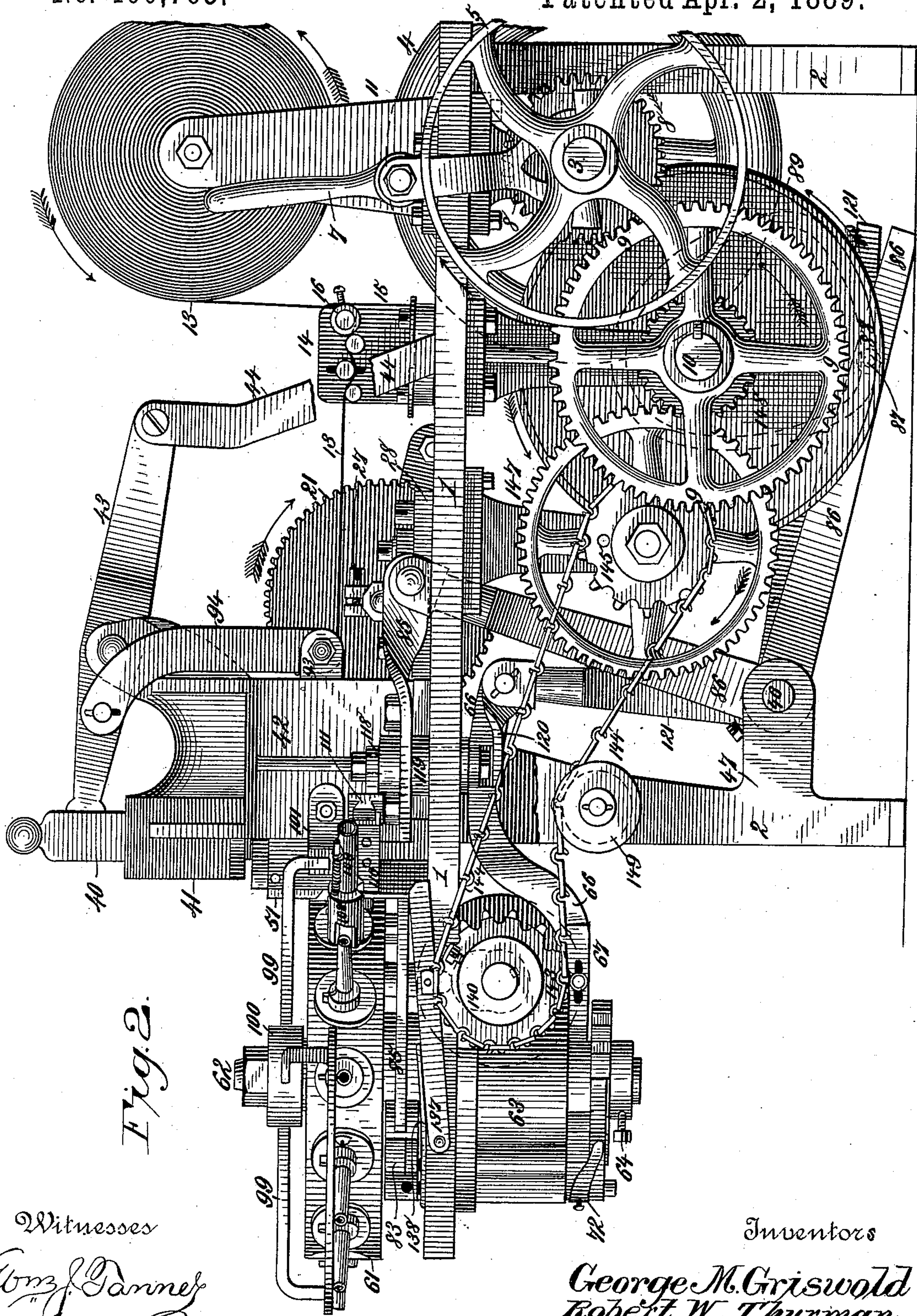


Fig. 2.

Witnesses

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Richard H. Wright.

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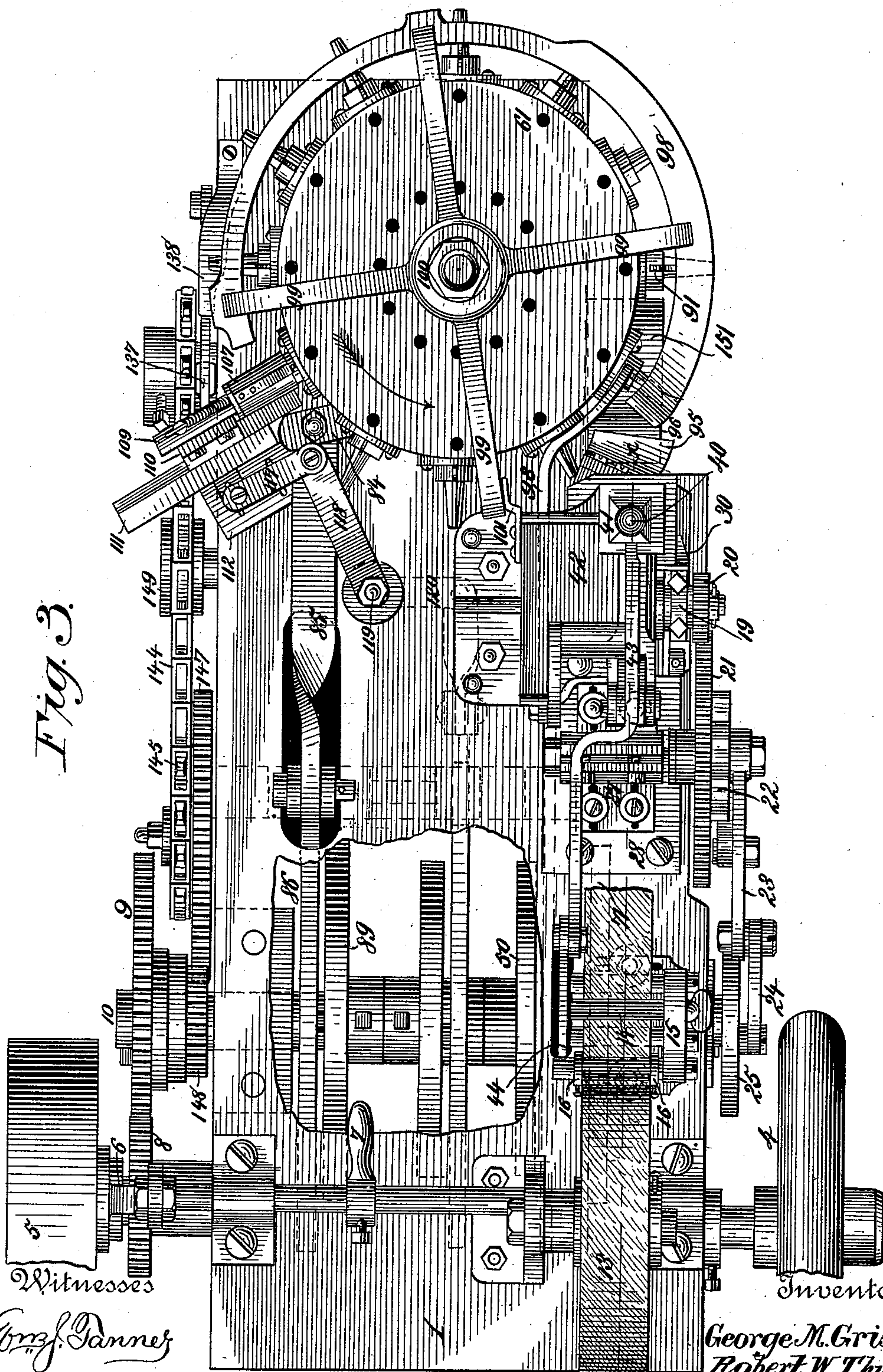
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Fig. 3.



Witnesses

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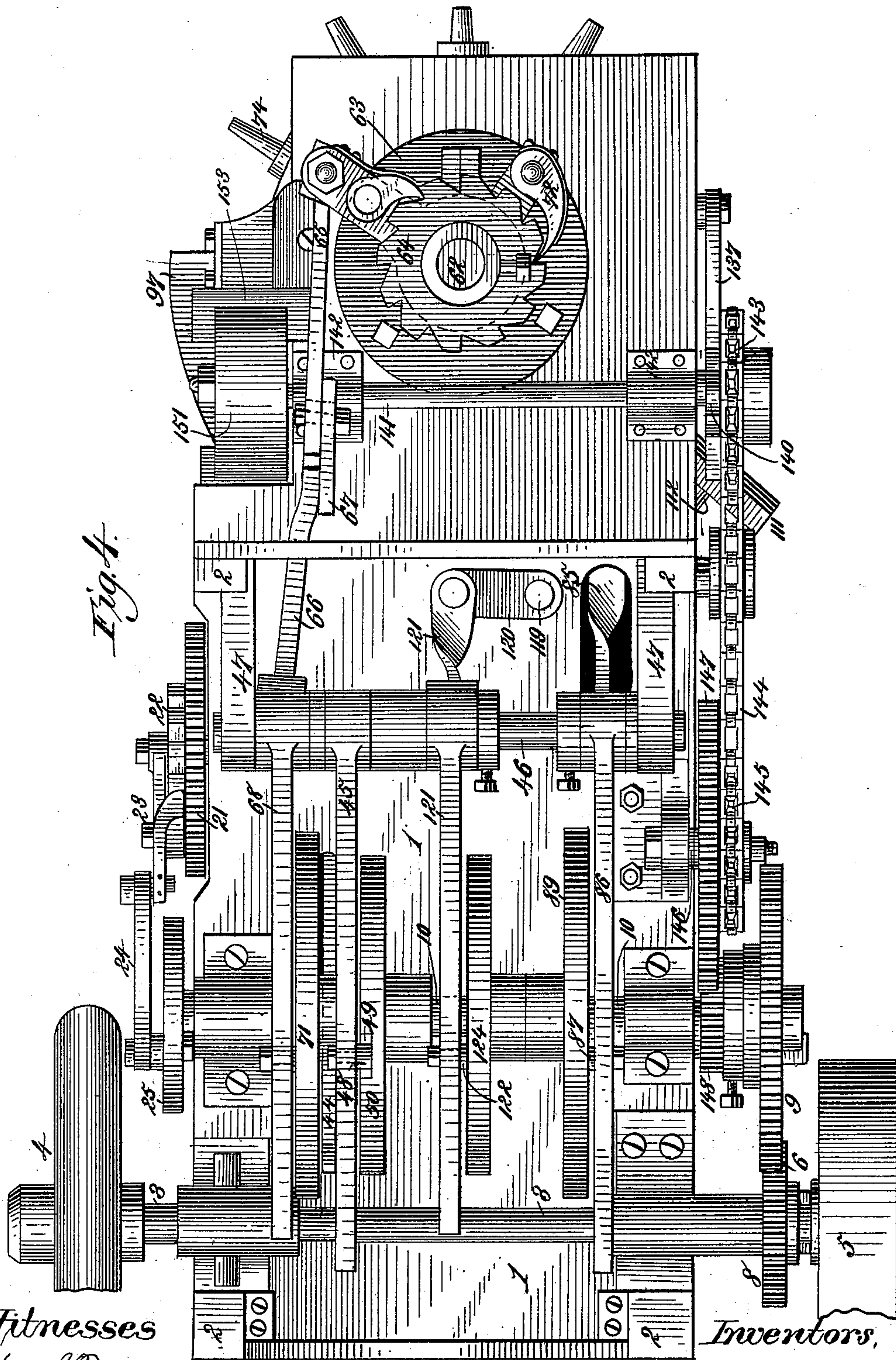


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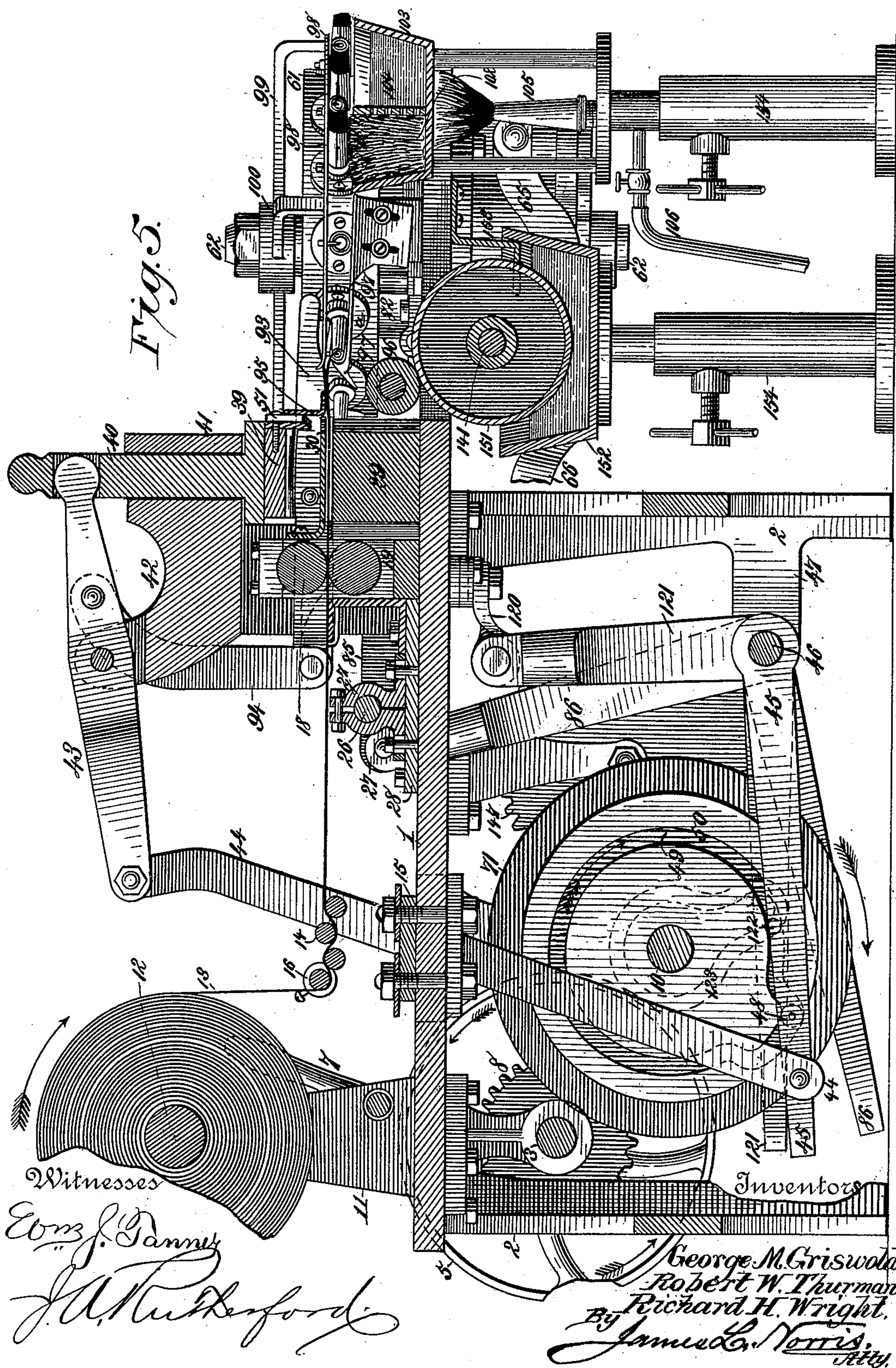


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8 Sheets—Sheet 5.

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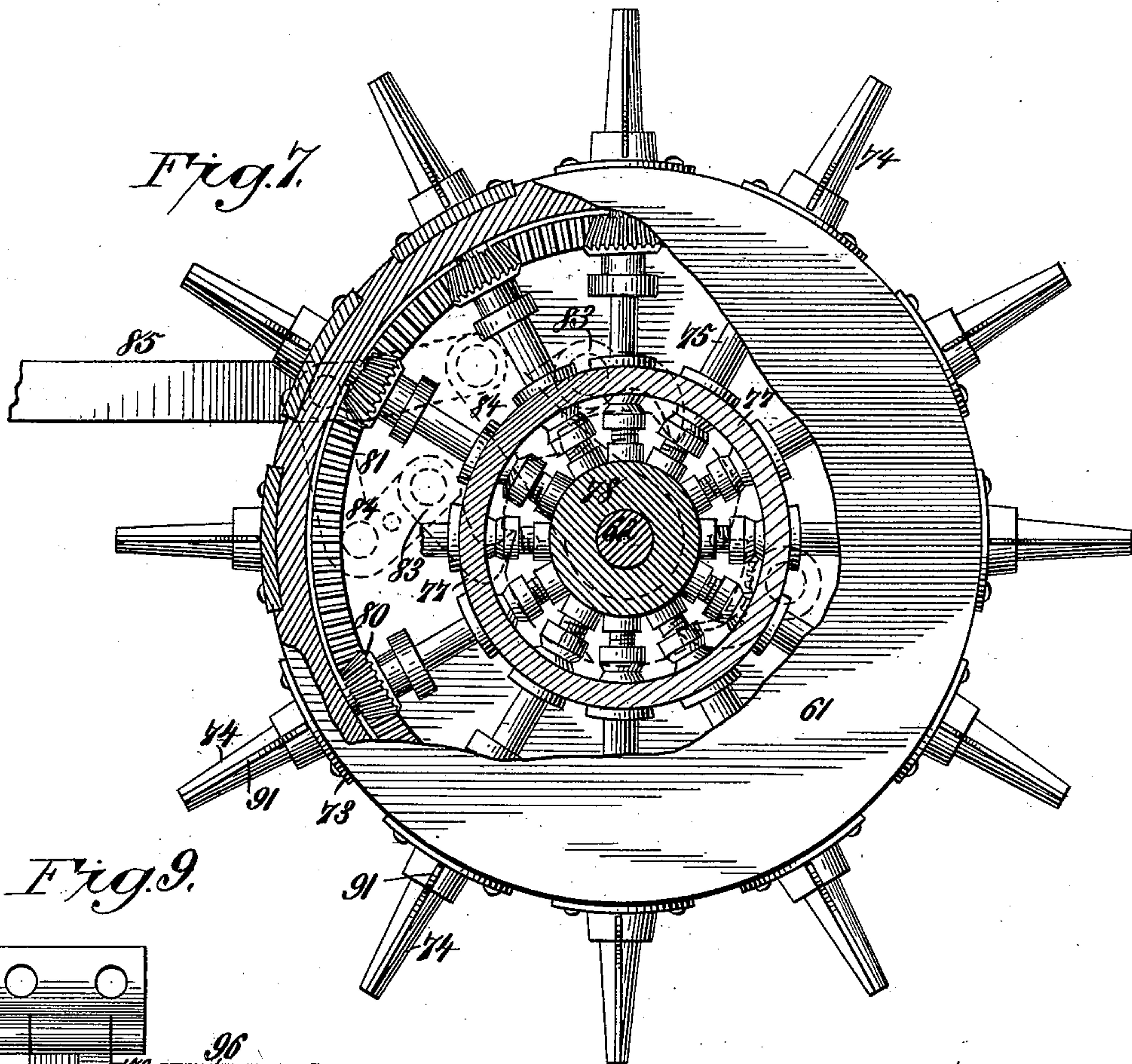


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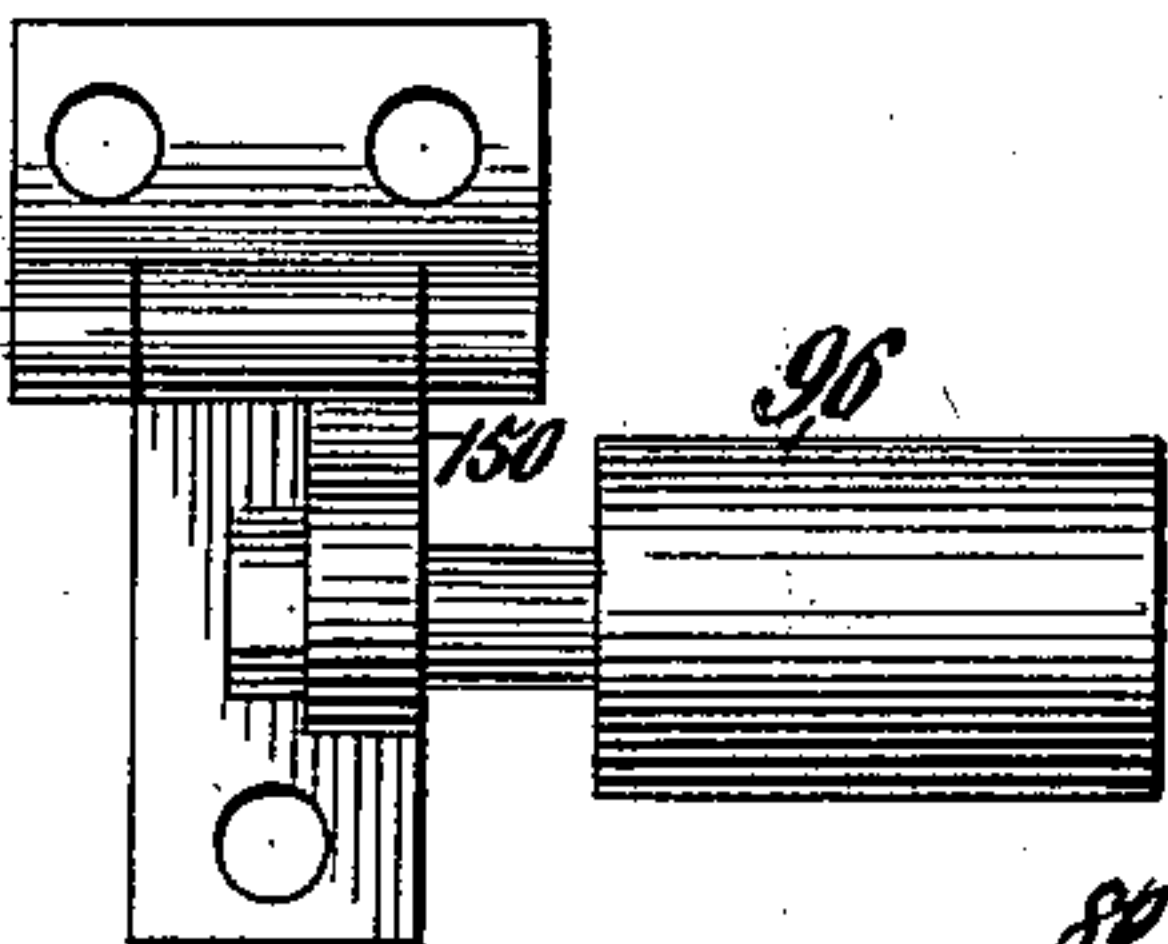
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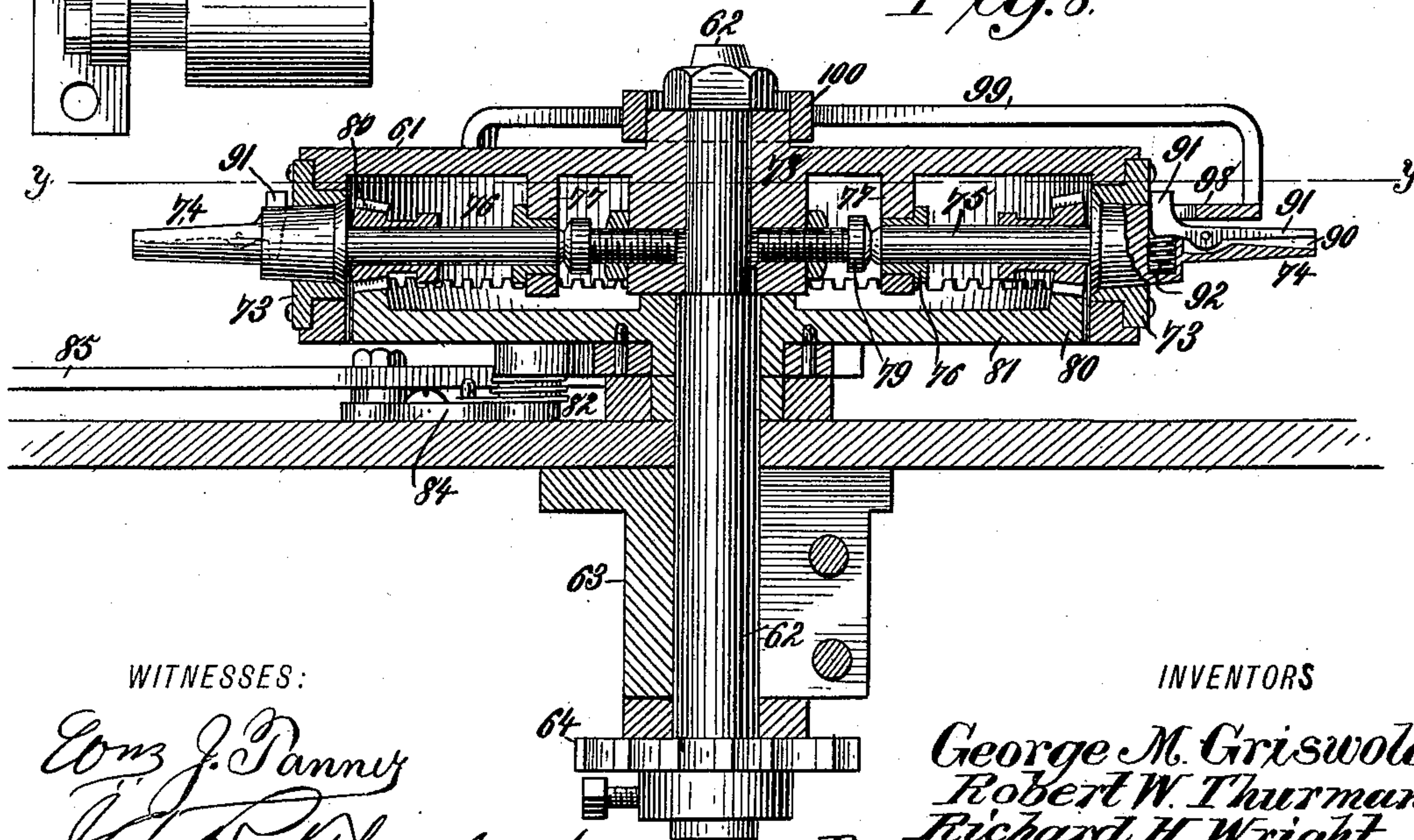
Patented Apr. 2, 1889.



*Fig. 9.*



*Fig. 8.*



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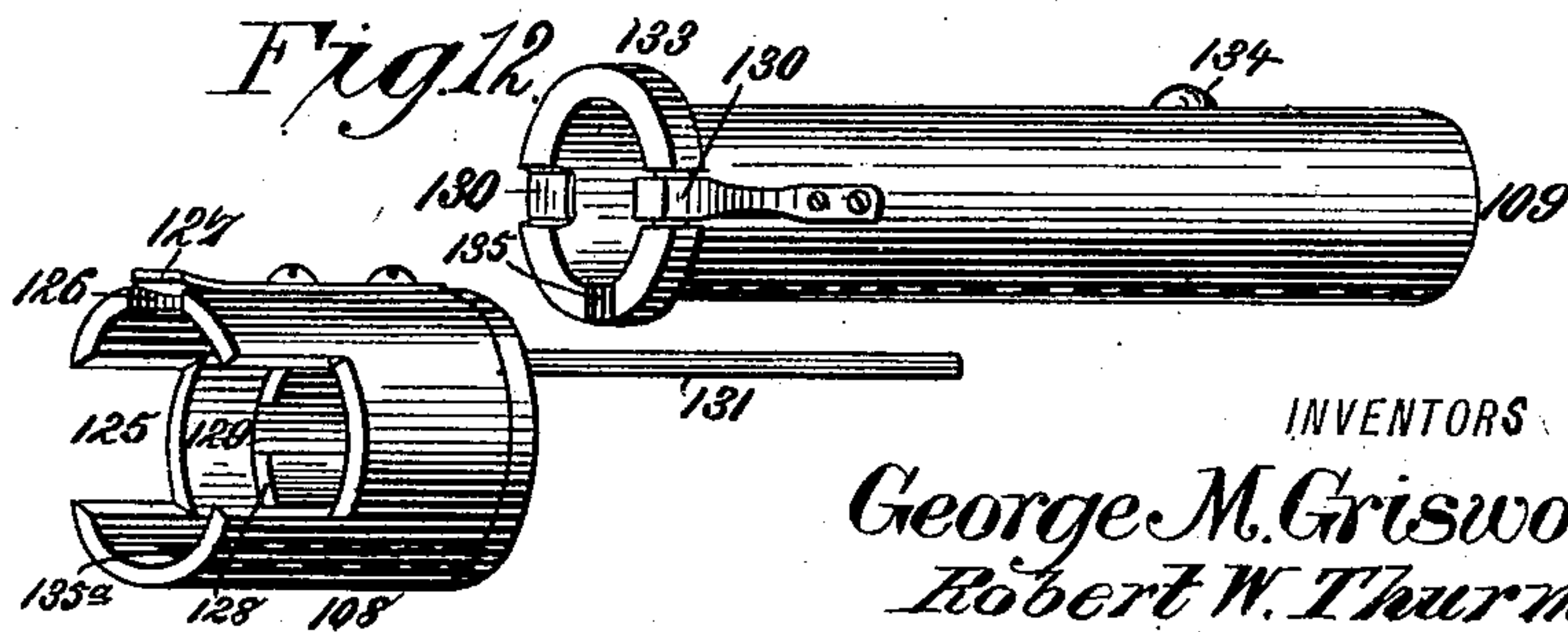
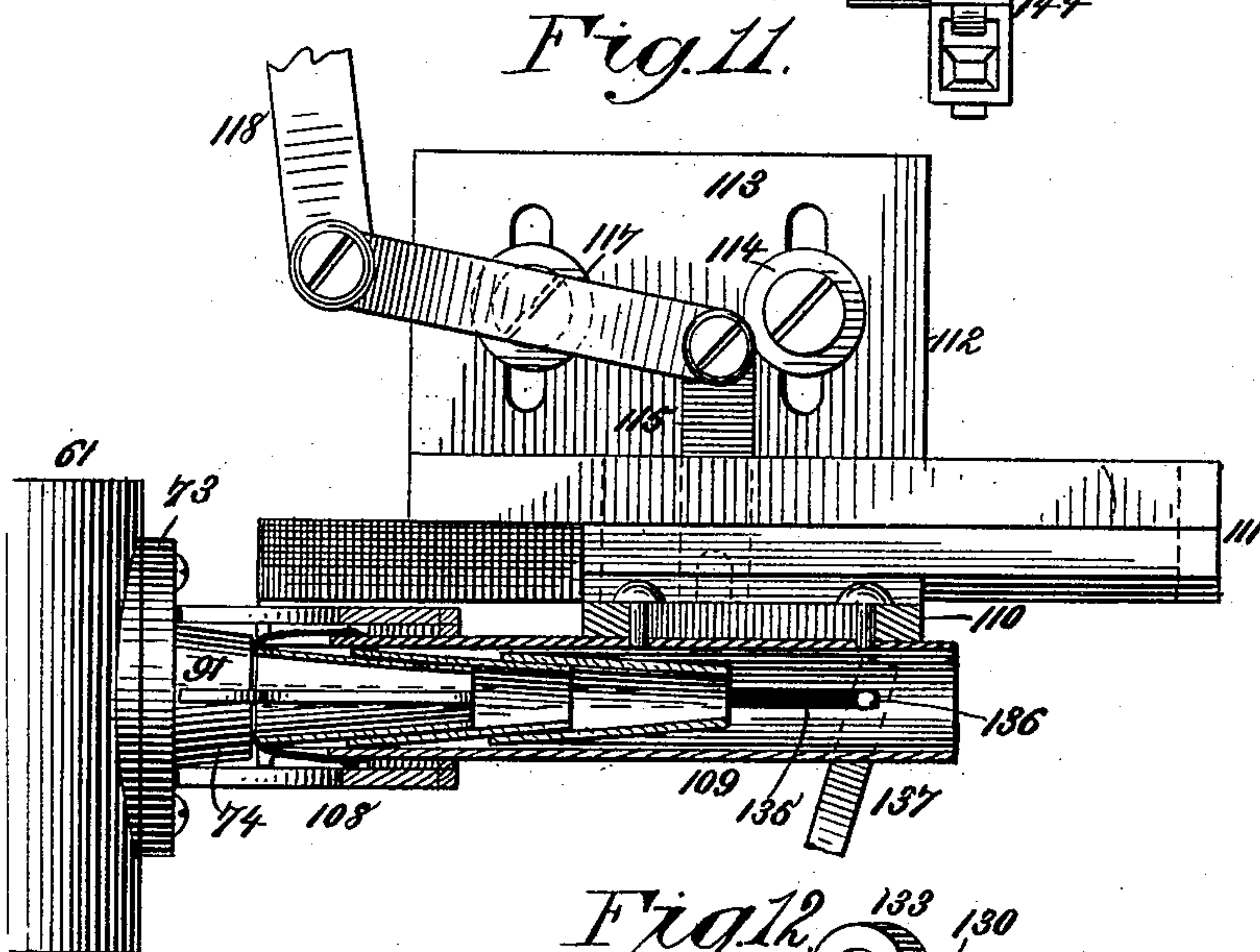
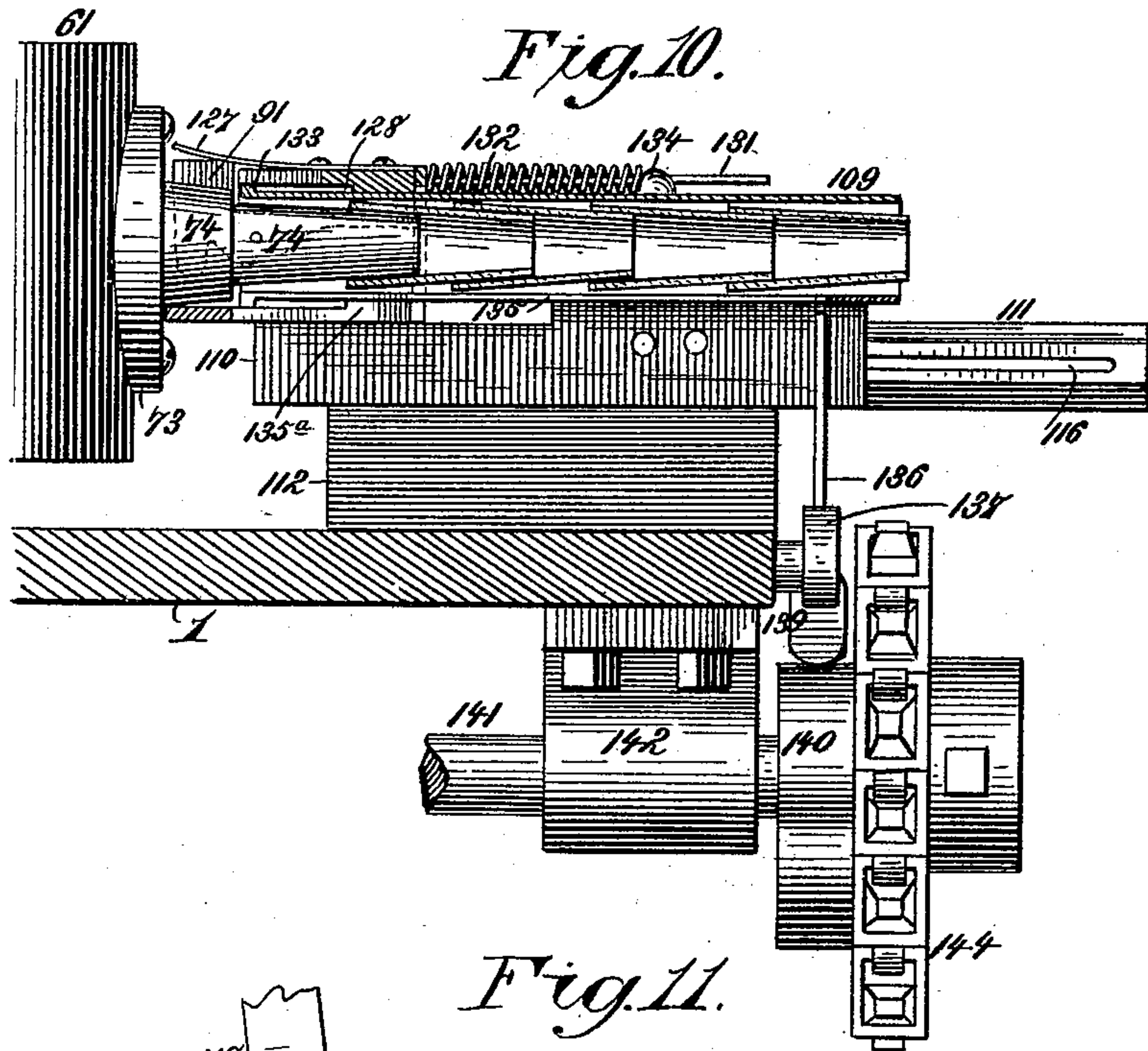


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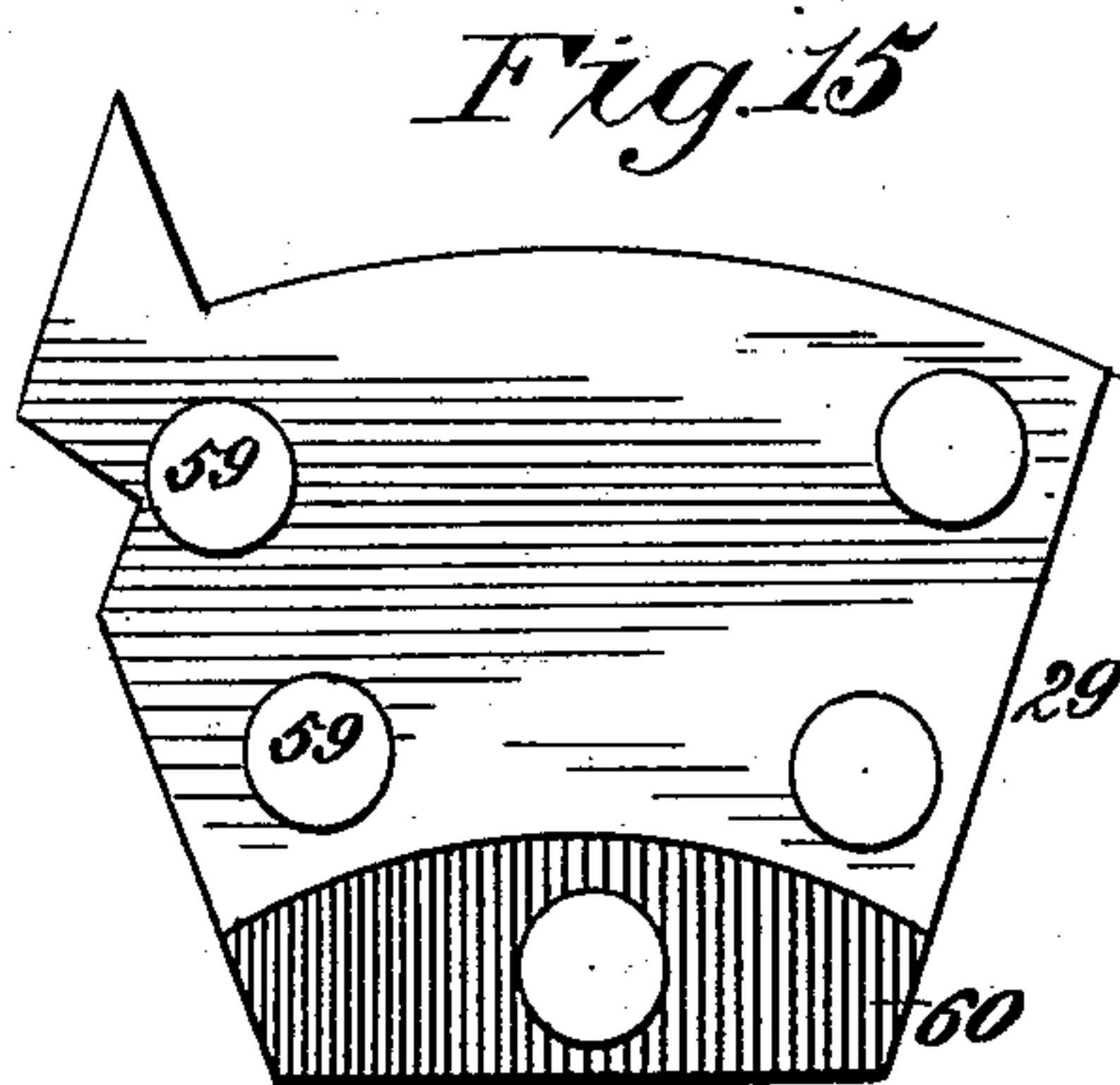
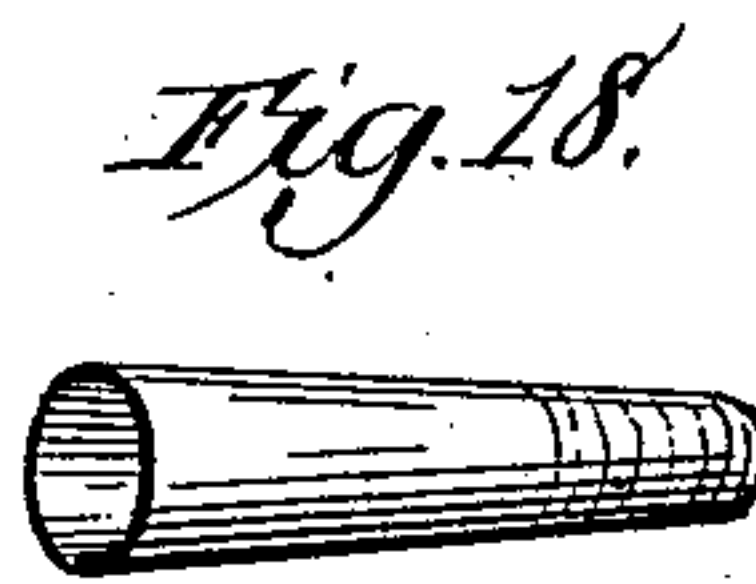
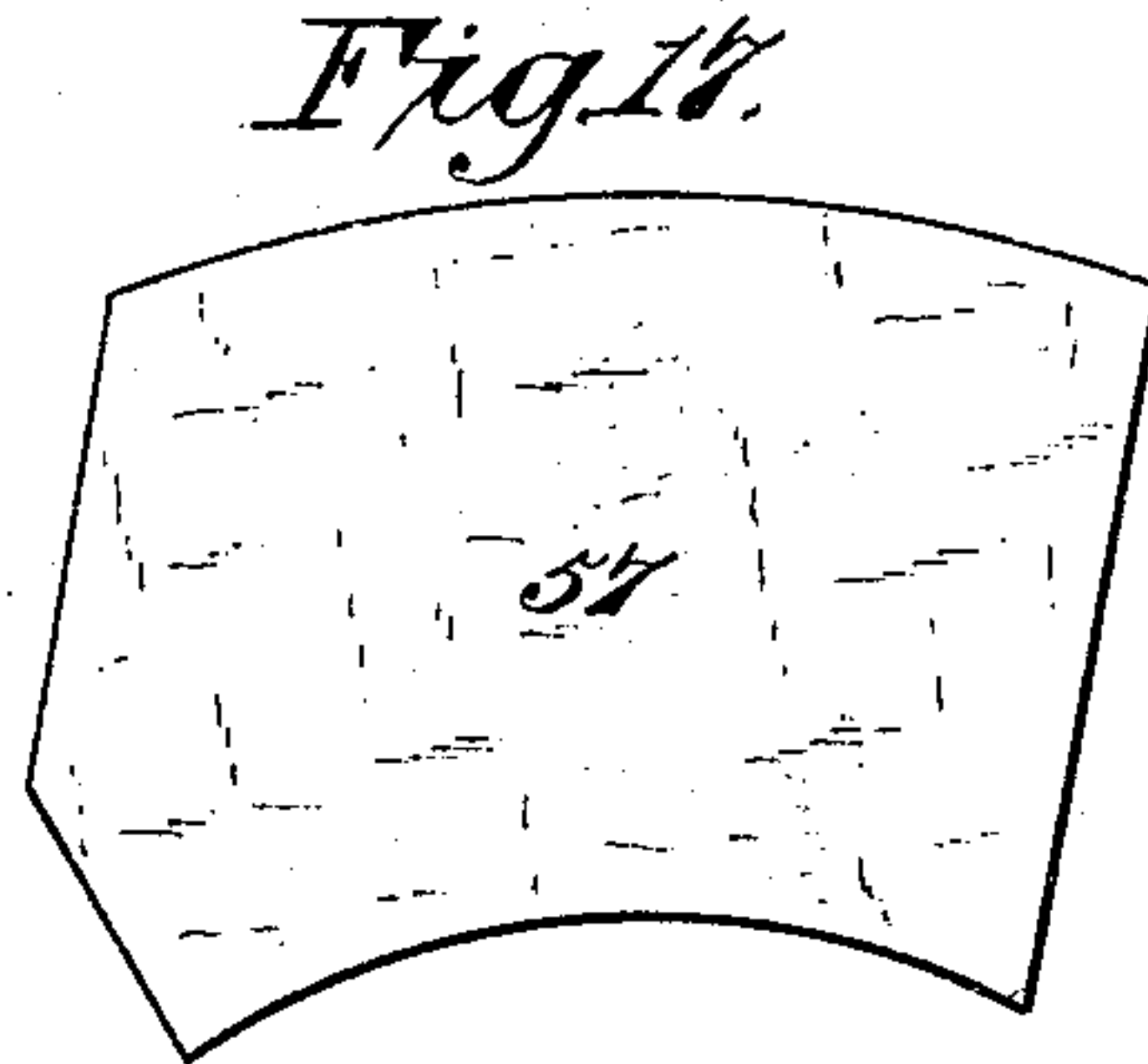
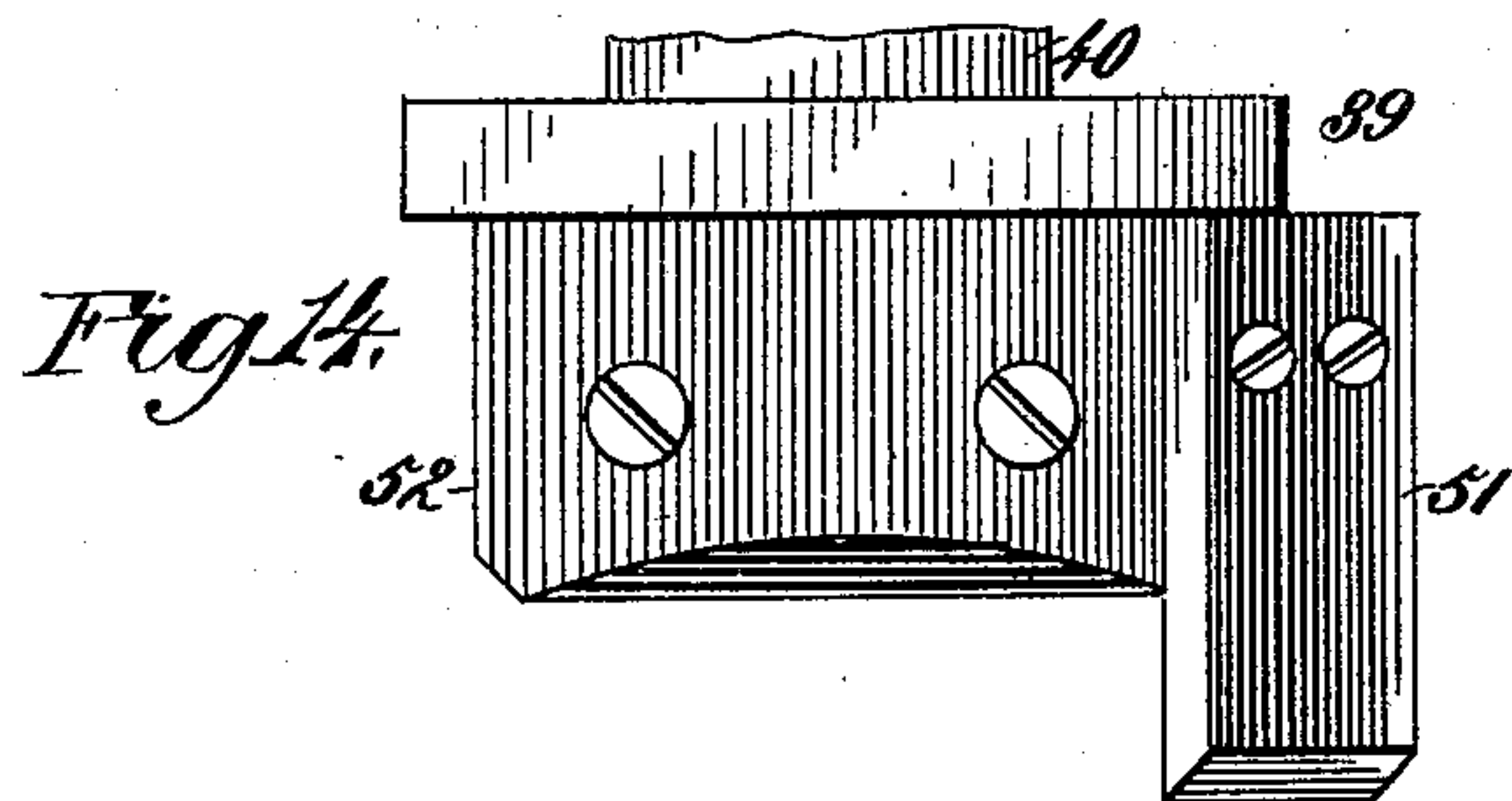
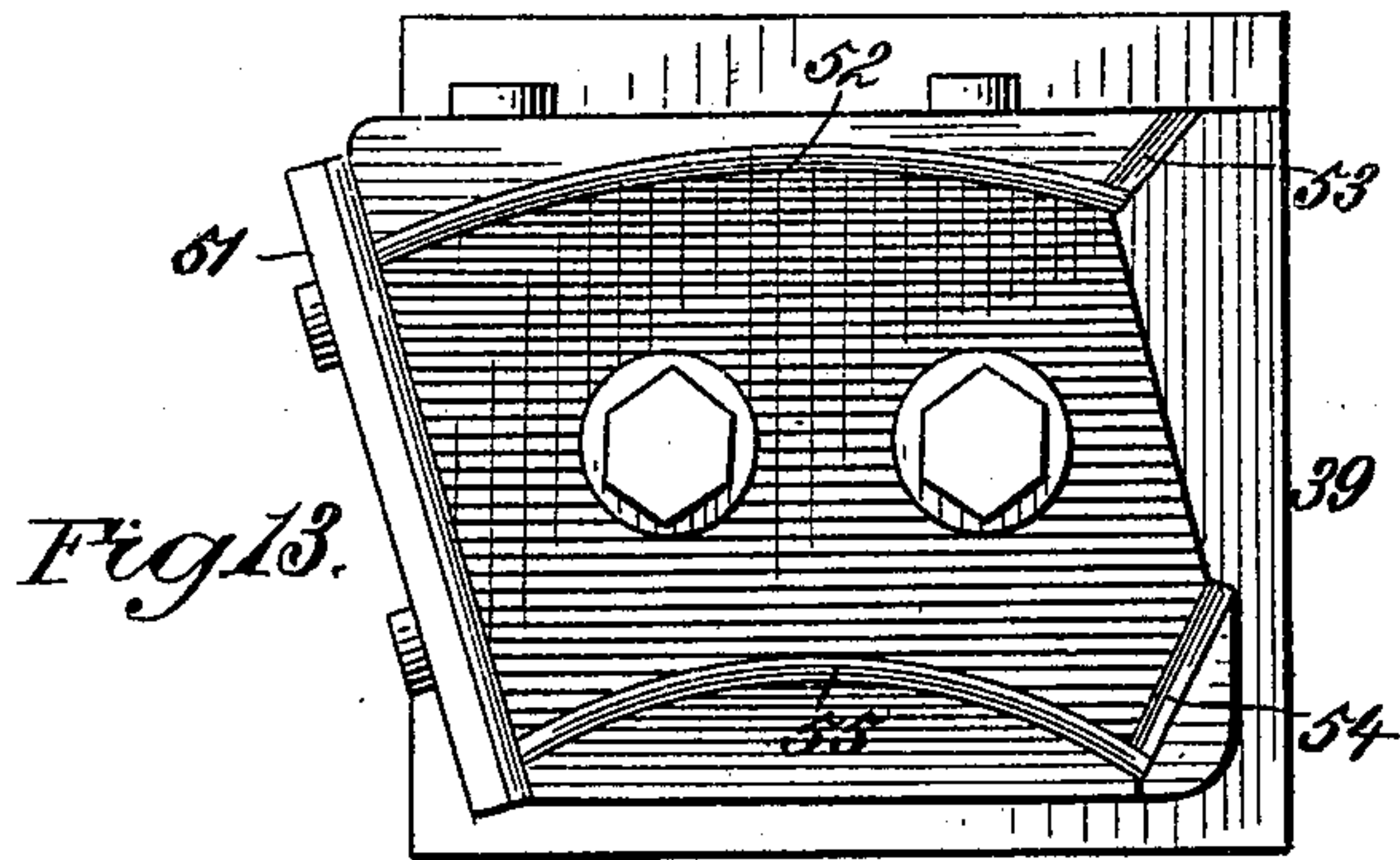
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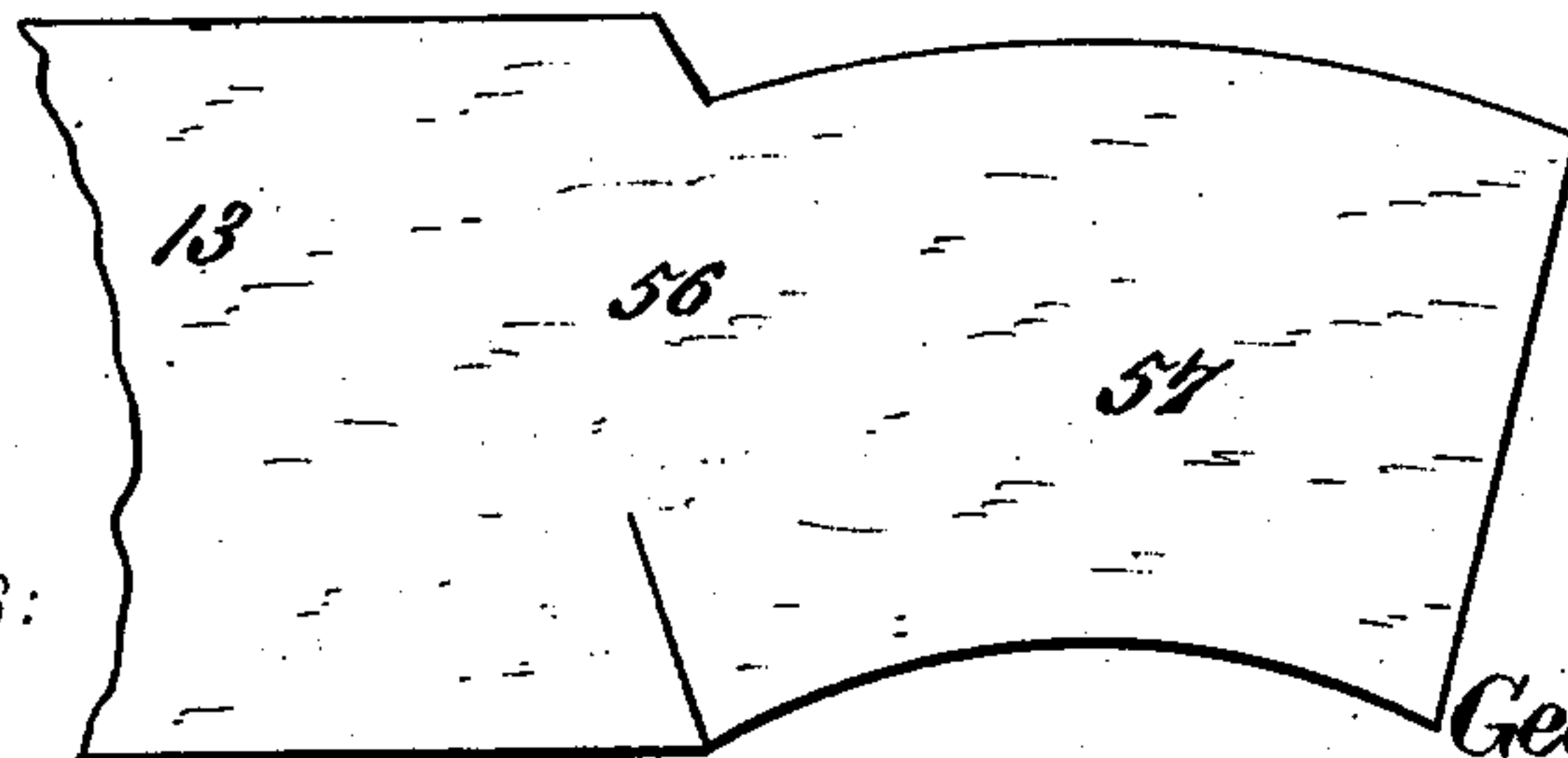
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*Fig. 16.*



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By *James E. Norris* ATTORNEY.



# UNITED STATES PATENT OFFICE.

GEORGE M. GRISWOLD, OF NEW HAVEN, CONNECTICUT, AND ROBERT W. THURMAN AND RICHARD H. WRIGHT, OF LYNCHBURG, VIRGINIA, ASSIGNORS TO THE LONE JACK CIGARETTE COMPANY, OF LYNCHBURG, VIRGINIA.

## MACHINE FOR MAKING CIGARETTE MOUTH-PIECES OR PAPER TUBES.

SPECIFICATION forming part of Letters Patent No. 400,765, dated April 2, 1889.

Application filed August 4, 1887. Serial No. 246,138. (No model.)

*To all whom it may concern:*

Be it known that we, GEORGE M. GRISWOLD, a citizen of the United States, residing at New Haven, in the county of New Haven and State of Connecticut, and ROBERT W. THURMAN and RICHARD H. WRIGHT, citizens of the United States, residing at Lynchburg, in the county of Campbell and State of Virginia, have invented new and useful Improvements in Machines for Making Cigarette Mouth-Pieces or Paper Tubes, of which the following is a specification.

The object of this invention is to provide an automatic machine for making cigarette mouth-pieces or holders from a continuous paper strip cut into blanks of proper shape, which are to be consecutively supplied on one edge with an adhesive substance, as required, then wound into the desired form, partially coated with paraffine or like substance, and ejected from the machine in a finished condition.

To this end the invention consists in a machine comprising the various devices and combinations of parts, as hereinafter more particularly described, and fully set forth in the claims.

In the annexed drawings, illustrating the invention, Figure 1 is a side elevation of our improved machine for making paper tubes or cigarette-holders with parts removed. Fig. 2 is a similar view of the opposite side of the same. Fig. 3 is a top plan view of the machine, showing the bed-plate partly broken away. Fig. 4 is an inverted plan view with parts removed. Fig. 5 is a longitudinal section on the line *x x* of Fig. 3. Fig. 6 is a perspective view of the clearing-plate. Fig. 7 is an enlarged plan view of the rotary mandrel-carrier, partly broken away, on the line *y y* of Fig. 8. Fig. 8 is an enlarged vertical section of the mandrel-carrier, showing the mechanism for rotating the same and for revolving the mandrels on their axes. Fig. 9 is a detail view of the roller for applying paste to the blank. Fig. 10 is an enlarged front elevation, partly in section, of the mechanism for pulling off or receiving and ejecting the finished tubes. Fig. 11 is a plan view of the same, partly in horizontal section. Fig. 12 is

an enlarged perspective view of the tube receiver or "pull-off" in two parts disconnected. Fig. 13 is an inverted plan of the cutter-head, enlarged, with knives attached. Fig. 14 is a side elevation of the cutter-head. Fig. 15 is an enlarged plan view of the die-block with wearing-plate removed. Fig. 16 shows one end of the paper strip with blank partly formed. Fig. 17 is a plan of the blank for forming a cigarette-holder. Fig. 18 is a perspective view of the finished cigarette holder or mouth-piece.

The frame of the machine comprises a table, 1, supported on legs or standards 2 in any suitable and convenient manner. At the rear end of the machine-frame, beneath the table 1, are bearings or journal-boxes for a power-shaft, 3, carrying a fly-wheel, 4, at one end and provided at the other end with a driving-pulley, 5, which is preferably furnished with any suitable clutch mechanism, 6, actuated by a hand-lever, 7, so as to permit the driving-pulley to be made fast or loose on said shaft, as required. The power-shaft 3 also carries a small spur-gear, 8, which meshes with and drives a large spur-gear, 9, secured to a cam-shaft, 10, supported in suitable bearings beneath the table or bed 1 in advance of the power-shaft.

Above the rear end of the table 1, near one side, is a bracket, 11, for supporting a reel or rotary spindle, 12, on which is placed the roll of paper 13, from which the proper blanks are to be cut for making the cigarette holders or mouth-pieces. The free end of the paper roll or strip 13 is carried or drawn between a set of straightening-rollers, 14, supported by a bracket, 15, secured to the top of the table. The first of these straightening-rollers 14 is provided with adjustable guide-collars 16, as shown in Figs. 2, 3, and 5, to hold the moving roll of paper in proper alignment, and the third roller in the set is vertically adjustable by means of a slot and thumb-screw, 17, as shown in Fig. 1, to vary the friction on the roll of paper as may be required to remove creases and make the paper smooth. From the straightening-rollers 14 the paper strip 13 passes to a pair of feed-rollers, 18, Fig. 5, jour-



naled in bearings 19 above the table. These feed-rollers are provided with small driving-gears 20, Fig. 1, driven by a large gear, 21, actuated by a pawl-and-ratchet mechanism, 22, carried by pivotally-connected levers 23 24, which are put in motion by a crank, face-plate, or eccentric-disk, 25, on the cam-shaft 10. The shaft 26 of the gear 21 may be supported in halved bearings 27, movable on a base-plate, 28, secured to the table, as shown in Figs. 2, 3, and 5, to facilitate adjustment of the gear.

In front of the feed-rollers 18 is an anvil or die-block, 29, the top of which is slightly below the level of the space between the feed-rollers.

To the front of the roller-bearings 19 is secured a clearing-plate, 30, Fig. 6, which projects above the die-block 29 in approximately a horizontal plane. This clearing-plate 30 comprises an attaching portion or bar, 31, from one end of which extends a downwardly-projecting neck, 32, carrying a broad plate, 33, the outline of which is approximately that of the paper blank to be cut. At the other end of the attaching-bar 31 is a downwardly and forwardly projecting neck, 34, formed with a forwardly-projecting wing, 35, having a downwardly and rearwardly inclined lip, 36.

Between the bar 31, necks 32 34, and wing 35 is an opening, 37, for passage of the paper strip 13 over the wing 35, and between the front edge of the wing 35 and rear diagonal edge of the plate 33 is an opening, 38, to permit the passage of the paper strip 13 beneath the plate 33 to the space between the clearing-plate and die-block.

Above the die-block 29 and pattern-gage 30 is suspended a vertically-reciprocating punch or cutter-head, 39, Figs. 13 and 14, carried by a plunger, 40, moving in a vertical guideway, 41, formed in a bracket, 42, Figs. 1, 3, and 5, supported on the machine-table. This plunger 40 and attached cutter-head 39 are actuated through a lever, 43, fulcrumed to the rear upper portion of the bracket 42 and pivoted at its rear end to the upper end of a connecting bar or lever, 44, the lower end of which is pivoted to a lever, 45, fulcrumed at one end on a fixed transverse rod, 46, supported by brackets 47, projecting from the supporting framework of the machine. The lever 45 carries a small friction-roller, 48, Fig. 5, engaged in the cam-groove or race 49 of a cam-disk, 50, secured to the cam-shaft 10, and by which the levers 45 44 43 and connected cutter-head 39 are actuated.

The form of the reciprocating cutter-head 39 and its attached knives 51, 52, 53, 54, and 55 is shown in Figs. 1, 5, 13, and 14. It will be seen that the several knives correspond in inclination and curvature with the form of the blank to be cut, as shown in Figs. 16 and 17. The first descent of the cutter-head upon and around the clearing-plate 33 cuts the end of the paper strip 13 beneath said plate into the shape shown in Fig. 16, thereby nearly

forming a blank, but leaving it integral with the paper strip at the point 56, so that the incomplete blank will be fed forward with said paper strip as the cutter-head ascends. On the next downward stroke of the cutter-head this incomplete blank will be severed on the line 56 by the forward knife, 51, thus completing the blank 57, as shown in Fig. 17, and partly forming another blank on the end of the paper strip. In this operation the clearing-plate 30 above the blank serves to prevent said blank from rising with the receding knives. The upper surface of the die-block 29 may be faced with a steel wearing-plate, 58, Fig. 1, secured by screws passed into openings 59, Fig. 15, in the top of the die-block. As shown in Fig. 15, which represents a plan or top view of the die-block with the wearing-plate removed, it will be seen that the upper surface of said block corresponds with the outline of the blank to be formed and that it is provided at the bottom with a base-flange, 60, through which it is secured to the machine-table.

At the front end of the machine is located the mechanism for making from the blank 57 a papertube adapted for use as a cigarette holder or mouth-piece. This mechanism comprises various devices which will now be described in connection with the means for operating the same.

In order to effect the manufacture of the paper tubes or cigarette-holders in large quantities with ease and rapidity, a number of rotary mandrels are mounted in a rotary support or carrier, 61, of circular form, keyed centrally to a vertical shaft, 62, having a bearing in a journal-box, 63, bolted to the under side of the machine-table. The shaft 62 and attached mandrel-carrier 61 are rotated intermittently by a pawl-and-ratchet mechanism, 64, of any suitable construction, actuated through the bent levers 65 66, connected by a slotted link, 67, one end of the bent lever 66 being pivoted to the upper arm of a bell-crank, 68, fulcrumed on the fixed shaft or rod 46, and having its lower arm provided with a friction-roller, 69, Fig. 1, engaging a cam-race, 70, in a cam-disk, 71, carried by the cam-shaft 10, from which the mandrel-carrier 61 is thus actuated. In order to prevent backlash an ordinary spring-pawl, 72, Figs. 2 and 4, is provided.

The periphery of the rotary carrier 61 is pierced at regular intervals for receiving the steel wearing-collars 73, that afford bearings for the body portions of the rotary mandrels 74, employed in making cigarette-holders. These mandrels 74 project radially from the circular carrier 61, and have a tapering form, small at their outer ends and enlarged at their rear portions, where they are supported in the periphery of the carrier.

One dozen mandrels are shown in the drawings; but it is obvious that a machine can be made with a greater or less number. Each mandrel 74 is provided with a stem or shank,



75, the rear or inner end of which has a bearing in a steel wearing-collar, 76, a number of which are supported in an annular projection, 77, depending from the top of the carrier 61, near its hub 78, Figs. 7 and 8. The carrier-hub 78 is perforated radially to receive adjustable thrust-bearings 79, that are arranged in line with the several mandrels.

On each mandrel-stem 75 is secured a bevel-pinion, 80, which meshes with a circular rack or bevel-gear, 81, placed loosely around the carrier-shaft 62 beneath the mandrels. This rack or gear 81 is actuated by a suitable pawl or ratchet mechanism, 82, provided with means for preventing backlash, as usual. The driving-pawls 83 of this ratchet mechanism 82 are mounted on horizontally-arranged bell-cranks 84. (Shown by dotted lines in Fig. 7.) These bell-cranks 84 are connected to a lever, 85, which is pivoted to the upper arm of a bell-crank, 86, fulcrumed on the transverse rod 46, and having its lower arm provided with a friction-roller, 87, Fig. 2, engaged in the cam-race 88 of a cam-disk, 89, on the shaft 10, whereby the tube-forming mandrels 74 are rotated.

As clearly shown in Fig. 8, each rotary mandrel 74 is hollow and provided on its top with a longitudinal slot, 90, extending to the outer mandrel end. In this hollow mandrel is pivoted a latch or dog, 91, for gripping one corner of the blank to be formed into a tube or cigarette-holder. In the enlarged body portion of the mandrel, beneath the rear end of the dog 91, is a spiral spring, 92, which expands against the under side of the dog at its rear end and thereby depresses the forward end of the dog, so as to cause it to enter and remain within the mandrel. The rear end of the dog 91 is curved upward and projects through the rear end of the slot 90 above the mandrel.

When the rotation of the mandrel-carrier 61 has brought a mandrel, 74, into proper position diagonally in front of the die-block 29, the rear end of the dog 91 will have been depressed against the spring 92 by a curved lever, 93, pivoted in the bracket 42 and operated through a link, 94, that connects with the lever 43 for actuating the cutter-head. The forward end of the dog 91 is thus raised out of the slot 90 and above the mandrel. The movements of the machine are so timed that at this moment, while the dog 91 remains elevated, the forward edge of the incomplete paper blank, Fig. 16, at the corner nearest the outer end of the mandrel, is passed by the action of the feed-rollers 18 beneath the raised dog 91, and at the next downward stroke of the cutter-head, the knife 51 severs the blank 57 from the paper strip, as before explained. Simultaneously with the descent of the cutter-head the lever 93 releases the dog 91, which is immediately acted upon by the spring 92, so as to cause it to press the forward edge of the blank 57 into the slotted mandrel and hold it securely. The descent of the cutter-head

carries with it a presser-foot, 95, attached to the knife 51, and this presser-foot forces the rear edge of the paper blank 57 into contact with a paste-roller, 96, which is supplied with a suitable adhesive substance, as hereinafter explained. The bevel-gear 81 now makes one-third of a turn to the right and through the pinions 80 gives four revolutions to the mandrels, thereby winding the paper blanks thereon. At the same time the revolving mandrel-carrier 61 makes one-twelfth of a turn to the left, thereby bringing another mandrel diagonally in front of the die-block 29 to receive a blank, as before described. The movement of the carrier 61 and gear 81 in opposite directions continues in this manner, and the rotating mandrels, with attached blanks, are carried over and in contact with an adjustable spring-guide or lower presser-arm, 97, provided with a hook-shaped end, 97<sup>a</sup>, having a convex surface, against which the paper blanks are pressed in succession by the movements of the mandrels as they pass over said convex surface and beneath an upper presser-bar, 98, whereby the paper blanks are kept closely wound on the mandrels until the paste or adhesive substance on their outer edges has dried. The upper presser-bar, 98, is approximately circular in form, as shown in Fig. 3, and extends nearly around the mandrel-carrier. This presser-bar 98 is provided with radial arms 99, connected to a hub, 100, that rests loosely on the hub of the mandrel-carrier, so as to be capable of yielding slightly; but in order to prevent the bar 98 from turning with the carrier a stop, 101, Fig. 2, is attached to the bracket 42, in line with one of the radial arms. As the revolution of the mandrel-carrier continues, the mandrels and blanks wound thereon are made to pass over a sponge or other absorbent substance, 102, saturated with melted wax or paraffine, with which the tips of the mouth-pieces are thus coated to prevent them from sticking to the lips of the cigarette-smoker. The sponge 102 is placed in a receptacle, 103, having a perforated partition, 104, that separates the sponge from the wax or paraffine, which can be kept in a melted condition by means of a gas-jet, 105, connected with a supply-pipe, 106; or a lamp may be used, if preferred. When one revolution of the mandrel 61 is about two-thirds completed, the mandrel that was first supplied with a paper blank arrives opposite a receiver or "pull-off" that comprises two telescopic tubular parts, 108 and 109, Fig. 12, one of which (indicated by 109) is firmly secured to a horizontal slide, 110, movable on a dovetailed or ribbed guideway, 111, which is formed on or supported by an angle-block, 112, adjustable on the machine-table 1 by means of slots 113 and set-screws 114, Fig. 11, so as to enable the pull-off to be adjusted to or from the mandrel-carrier. To the slide 110 is attached a horizontal arm, 115, which passes through a slot, 116, in the guideway 111 and



connects with a lever, 117, as shown in Fig. 11. The lever 117 is attached at one end to the rigid arm 115 and at the other end to a lever, 118, mounted securely on the upper end of a vertical spindle, 119, Figs. 2 and 4, which is provided at its lower end with a rigid arm, 120, that connects with the upper arm of a bell-crank, 121, fulcrumed on the fixed rod 46 and having on its lower arm a friction-pulley, 122, Fig. 5, that engages a cam-race, 123, in a cam-disk, 124, Fig. 4, on the cam-shaft 10, thus providing means for actuating the pull-off from said cam-shaft.

The tube 108, composing the inner end of the "pull-off" or "receiver," is of large diameter and less length than the tube 109, which constitutes the outer end of said device. In each side of the tube 108, at its inner end, is a rectangular opening, 125, to afford a clearance for the mandrels, as will be presently explained. This tube 108 also has an open-ended slot, 126, in its top, a spring, 127, that covers said slot and projects beyond the inner end of the tube, and an internal annular shoulder, 128, cut away centrally on each side at 129, as shown in Fig. 12, to permit the passage of spring-hooks 130 on each side of the other tube. To the outer end of the tube 108 is attached a forwardly-projecting guide-rod, 131, for a spiral spring, 132, that is supported thereon. The tube 109 is formed at its inner end with a flange or collar, 133, to engage the annular shoulder 128 in the tube 108. On its top it is provided with a stop or bearing, 134, for the outer end of the spiral spring 132, and at its bottom it has a longitudinal slot, 135, which corresponds with a similar slot, 135<sup>a</sup>, in the bottom of the tube 108 for passage of an ejector rod or wire, 136, that is arranged to remove the finished tubes from the pull-off or receiver.

It will be seen that the tube 108 is supported loosely on the tube 109, and that the rod 131, spiral spring 132, and stop 134 together form a yielding connection between these two tubes comprising the pull-off and receiver for the finished mouth-pieces. This pull-off or receiver is reciprocated along the guideway 111 by means of the operating devices connecting with the cam-shaft 10, as already explained.

The various parts of the machine are so arranged and timed that the pull-off, which has moved outward along the guideway 111 in removing a finished mouth piece or tube from a mandrel, will return in season to inclose the next mandrel and its attached mouth-piece, which have meanwhile been brought into proper position by the revolving mandrel-carrier. As the tubular portion 108 of the pull-off moves inward around the mandrel 74 and into contact with the collar 73, the spring 127 will bear on the rear upwardly-turned end of the dog or latch 91, depressing the same against the action of the spring 92 and causing the forward end of the dog to rise slightly in the mandrel-slot 90, thereby disengaging the dog from the inwardly-turned lip or cor-

ner of the paper blank at the tip of the mouth-piece. When the inner end of the tube 108 comes in contact with the collar 73, its movement is of course arrested; but the tube 109, carried by the slide 110, continues to move inward within the tube 108 until the spring hooks or catches 130 pass behind and engage the enlarged end of the mouth-piece. In this inward movement of the tube 109 the spiral spring 132 is compressed, and as the said tube 109 recedes, carrying with it the mouth-piece or cigarette-holder, the tension of this spring 132 exerts a pressure on the tube 108 to hold it in place with its spring 127 bearing on the rear end of the dog 91 until the cigarette-holder has been nearly withdrawn from the mandrel. By this time the collar 133 will be in contact with the shoulder 128, and both tubes 108 and 109 thus connected will move off together and withdraw the cigarette-holder completely from the mandrel. The dog 91, relieved from the pressure of the spring 127, returns to its normal position under the action of the spring 92, and the mandrel-carrier 61 makes a partial revolution to bring another mandrel into position for the action of the pull-off. The openings 125 in the sides of the tube 108 afford a clearance for the mandrel, so as to prevent any liability of interference between the pull-off and rotary mandrel-carrier in their respective movements. The slot 126 in the top of the tube 108 enables the rear upwardly-projecting end of the dog 91 to come under the action of the spring 127, and the notches or recesses 129 in the sides of the annular shoulder 128 permit the hooks 130 to carry the removed mouth-piece well into the pull-off or receiver.

Each successive cigarette holder or mouth-piece removed by the pull-off is telescoped in said pull-off or receiver with the holder or mouth-pieces previously removed, as shown in Figs. 10 and 11, until the tube 109 contains, say, five telescoped or nested mouth-pieces. After the pull-off has thus received, say, five mouth-pieces or holders, and as it moves inward to take off another, the ejector-rod 136 is moved upward into the slot 135<sup>a</sup> at the rear end of the line of telescoped mouth-pieces, thereby obstructing their return with the tube 109 and causing them to drop from the outer end of said tube into any suitable receptacle.

The ejector 136 is carried by a lever, 137, that is pivoted to the table 1 and depressed by a spring, 138, attached to the table, as shown in Figs. 2 and 3. On the under side of the ejector-lever 137 is a projection, 139, that rests on a cam, 140, carried by a shaft, 141, mounted in bearings 142 beneath the machine-table. The shaft 141 is rotated through a sprocket-gear, 143, driven by a chain belt, 144, from a sprocket-gear, 145, mounted on a short shaft, 146, beneath the machine-frame. This short shaft 146 is driven through a spur-gear, 147, from a pinion, 148, on the main cam-shaft 10, and thereby actuates the cam 140 through the intermediate mechanism to cause



it to elevate the ejector-rod 136 at proper intervals. To tighten the belt 144 and hold it in position, a flanged idler, 149, is provided, as usual.

5 The paste-roller 96 is journaled in a hinged bearing, 150, Fig. 9, so as to enable it to have a yielding contact with the supply-roller 151, which is mounted on one end of the shaft 141 at the side of the machine-table and beneath  
10 the paste-roller. This supply-roller 151 revolves in a suitable receptacle, 152, containing paste or other adhesive material, and a "doctor" or scraper, 153, is provided to spread the adhesive mixture evenly on the supply-  
15 roller.

The paste-receptacle 152 and the paraffine-receptacle 103, with its heating device 105, may be mounted on vertically-adjustable stands 154, as shown in Fig. 5, and these  
20 stands can be either separate from the machine-frame or made a part thereof, as preferred.

From the foregoing description the various steps in the manufacture of paper tubes for  
25 cigarette holders or mouth-pieces will be readily understood and need not be further explained.

The machine is automatic in all its operations, and is capable of rapidly producing  
30 large quantities of tapering tubes or holders, such as shown in Fig. 18, completely finished and ready for the trade.

We do not herein claim the combination, with a rotary mandrel having a longitudinal  
35 groove, of a swinging spring gripping-finger pivoted intermediate its ends in said groove, a swinging lever for acting on the tail end of the finger to swing the latter, and a rotary cam for actuating the lever, as such is claimed  
40 in an application filed by Robert W. Thurman March 28, 1887, Serial No. 232,624.

What we claim as our invention is—

1. In a machine for making cigarette mouth-pieces or paper tubes, the combination of a  
45 cutting mechanism, substantially as described, rollers for feeding the paper strip, a paste-roller for applying an adhesive substance to one edge of a blank cut from said strip, and a presser-foot for pressing the edge of the  
50 blank into contact with the paste-roller, substantially as described.

2. In a machine for making cigarette mouth-pieces or paper tubes, the combination of a  
55 die-block, a vertically-reciprocating cutter-head, rollers for feeding a paper strip to the cutting mechanism, a paste-roller for applying an adhesive substance to one edge of a blank cut from the paper strip, and a presser-foot carried by the cutter-head to force the  
60 blank into contact with said paste-roller, substantially as described.

3. In a machine for making cigarette mouth-pieces or paper tubes, the combination of  
65 mechanism, substantially as described, for feeding a paper strip, a die-block, a vertically-reciprocating cutter-head having knives for cutting a blank from the paper strip, a

rotary mandrel provided with means, substantially as described, for grasping one corner of the blank at its forward end, a roller  
70 for applying an adhesive substance to the rear edge of the blank, and a presser-foot for forcing the blank into contact with said roller, substantially as described.

4. In a machine for making cigarette mouth-  
75 pieces or paper tubes, the combination, with a rotary mandrel-carrier, of a series of rotary mandrels mounted in said carrier, a receptacle for melted wax or paraffine, an absorbent material so placed in said receptacle as  
80 to come in contact successively with the cigarette mouth-pieces or tubes carried by said mandrels as the carrier rotates, and means for keeping the wax or paraffine in a melted condition, substantially as described. 85

5. In a machine for making cigarette mouth-  
pieces or paper tubes, the combination of a rotary mandrel-carrier, a pawl-and-ratchet mechanism provided with lever-connections  
90 for actuating said carrier from a cam-shaft, a series of mandrels mounted in said carrier and provided with pinions, a gear loosely surrounding the carrier-shaft and meshing with said pinions, a pawl-and-ratchet mechanism for driving said gear, and lever-con-  
95 nections for actuating said pawl-and-ratchet mechanism from the cam-shaft with which the mandrel-carrier is connected, all substantially as described.

6. In a machine for making cigarette mouth-  
100 pieces or paper tubes, the combination of a rotary mandrel-carrier, a series of rotary mandrels mounted in said carrier and each provided with a longitudinal slot, a gripping dog or latch pivoted in said slot and a spring  
105 located beneath the rear end of said latch, a vertically-reciprocating cutter-head provided with knives for forming blanks to be fed to said mandrels, and a lever connected by a link with the cutter-head lever and adapted  
110 to bear on the rear end of the mandrel latch or dog and thereby raise its forward end to engage a blank, substantially as described.

7. In a machine for making cigarette mouth-  
115 pieces or paper tubes, the combination, with a rotary mandrel-carrier and a series of rotary mandrels mounted therein and each provided with a longitudinal slot, a pivoted dog, and spring, of a reciprocating tubular pull-off or receiver formed in two telescopic parts hav-  
120 ing a yielding connection, substantially as described, and provided with a spring for raising the mandrel latch or dog, and spring-hooks for withdrawing a finished tube or mouth-piece from the mandrel, substantially  
125 as described.

8. In a machine for making cigarette mouth-  
pieces or paper tubes, the combination of a rotary mandrel-carrier, a series of rotary man-  
130 drels mounted in said carrier, a reciprocating pull-off or receiver for taking the finished mouth-pieces from said mandrels, a slotted guideway for the pull-off, an arm passed through the slot in said guideway and at-



tached to the pull-off, and lever-connections for actuating said arm from a cam-shaft with which the mandrels and mandrel-carrier are connected, all substantially as described.

9. In a machine for making cigarette mouth-pieces or paper tubes, the combination of a rotary mandrel-carrier, a series of rotary mandrels mounted therein, a reciprocating pull-off or receiver having a longitudinal slot, and an ejector-rod for entering said slot at intervals and removing the mouth-pieces or tubes collected in the pull-off or receiver, substantially as described.

10. In a machine for making cigarette mouth-pieces or paper tubes, the combination of a rotary mandrel-carrier, a series of rotary mandrels, a slotted pull-off or receiver for taking finished mouth-pieces from said mandrels, an ejector-rod carried by a spring-depressed lever, a cam for raising said lever, and means for actuating said cam from the shaft that actuates the mandrels, mandrel-carrier, and pull-off, substantially as described.

11. In a machine for making cigarette mouth-pieces or paper tubes, the combination, with a mandrel and mandrel-carrier, of a reciprocating tubular pull-off formed in two telescopic parts provided with means for releasing a mouth-piece or tube engaged on the

mandrel and for withdrawing the same, substantially as described.

12. In a machine for making cigarette mouth-pieces or paper tubes, the combination of a rotary mandrel-carrier, a series of rotary mandrels mounted in said carrier and provided with means, substantially as described, for gripping a paper blank, rollers for feeding a paper strip, mechanism, as set forth, for cutting a blank from said strip, a lever actuated from the cutting mechanism to cause the mandrel-gripping device to seize a blank, pressure devices for winding the blanks on the rotary mandrels, means for coating the tips of the mouth-pieces with paraffine or like material, a pull-off for withdrawing the finished mouth-pieces from the mandrels, and an ejector for removing said mouth-pieces from the pull-off, all substantially as described.

In testimony whereof we affix our signatures in presence of witnesses.

GEO. M. GRISWOLD.  
ROBERT W. THURMAN.  
RICHARD H. WRIGHT.

Witnesses:

PRENTICE W. CHASE,  
F. C. INGOLD,  
JNO. M. OTEY,  
K. OTEY.