

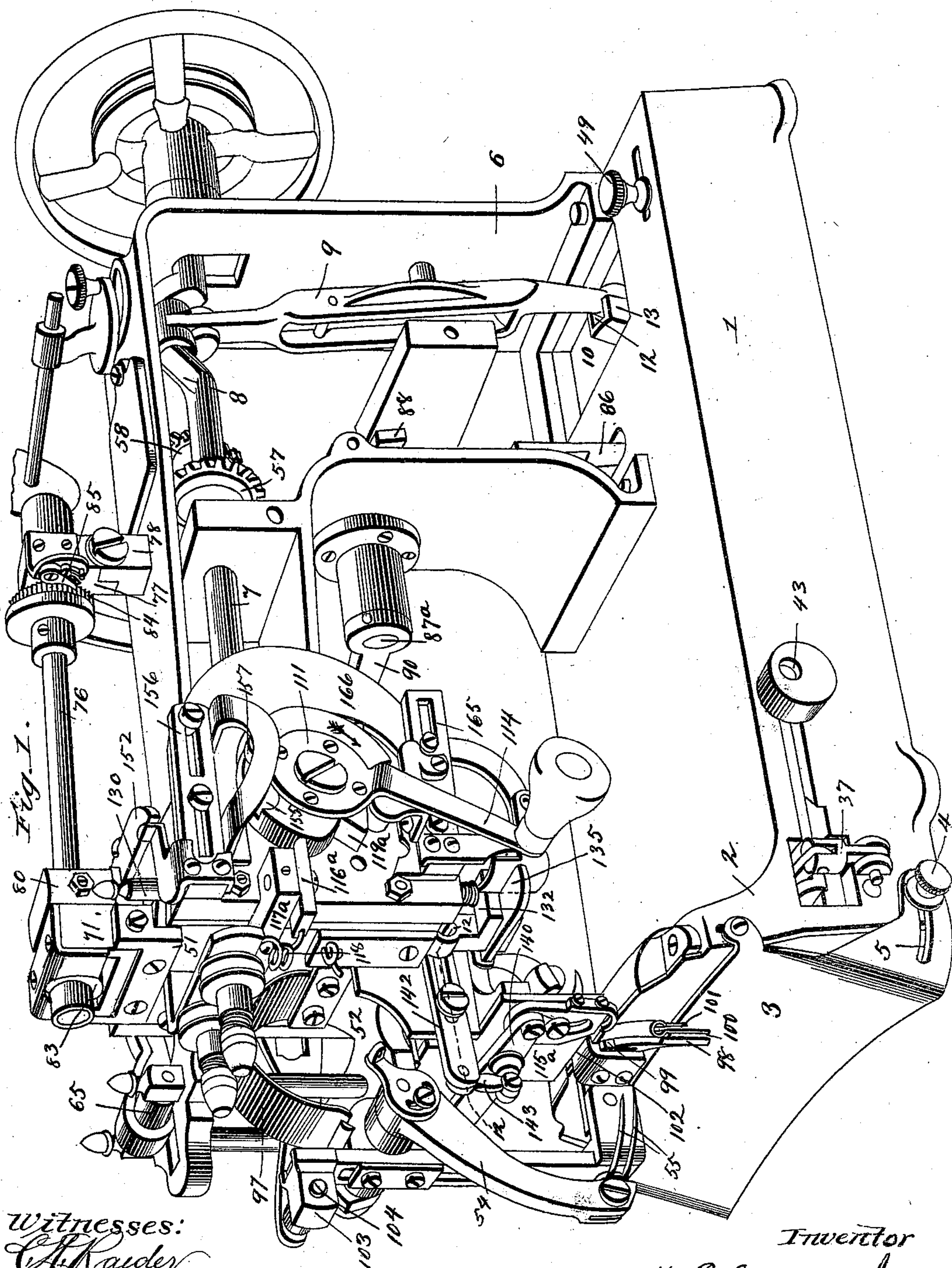
(No Model.)

9 Sheets—Sheet 1.

W. P. GAMMONS, Jr.
MACHINE FOR SEWING HATS.

No. 555,479.

Patented Feb. 25, 1896.



Witnesses:
C. A. Rader
H. D. Matthews.

Inventor
W. P. Gammons, Jr.
By *James J. Sheehy*
attorney

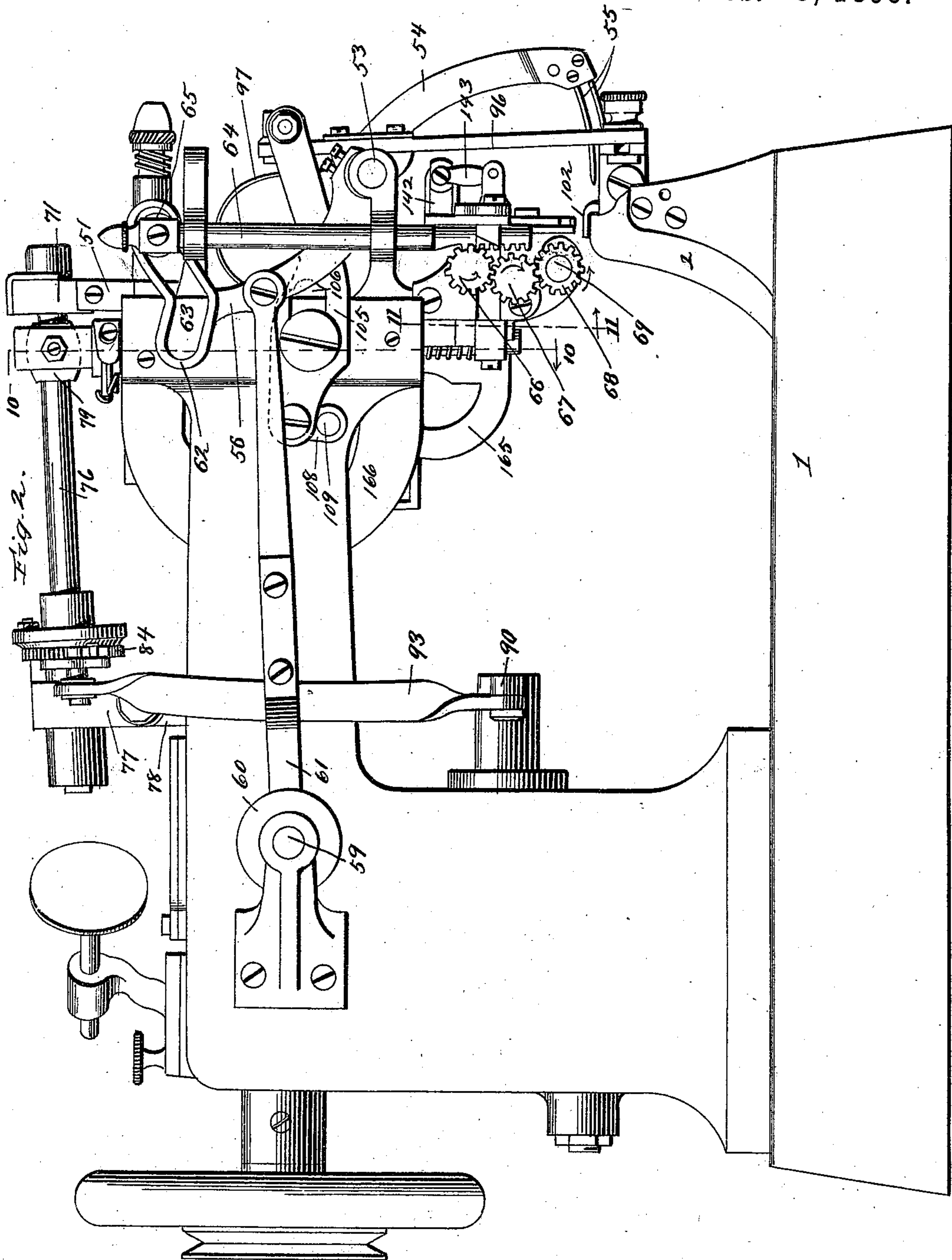
(No Model.)

9 Sheets—Sheet 2.

W. P. GAMMONS, Jr.
MACHINE FOR SEWING HATS.

No. 555,479.

Patented Feb. 25, 1896.



witnesses:
Chas. Rader
R. P. Matthews.

Inventor
W. P. Gammons, Jr.
BY *James J. Shulky*
Attorney

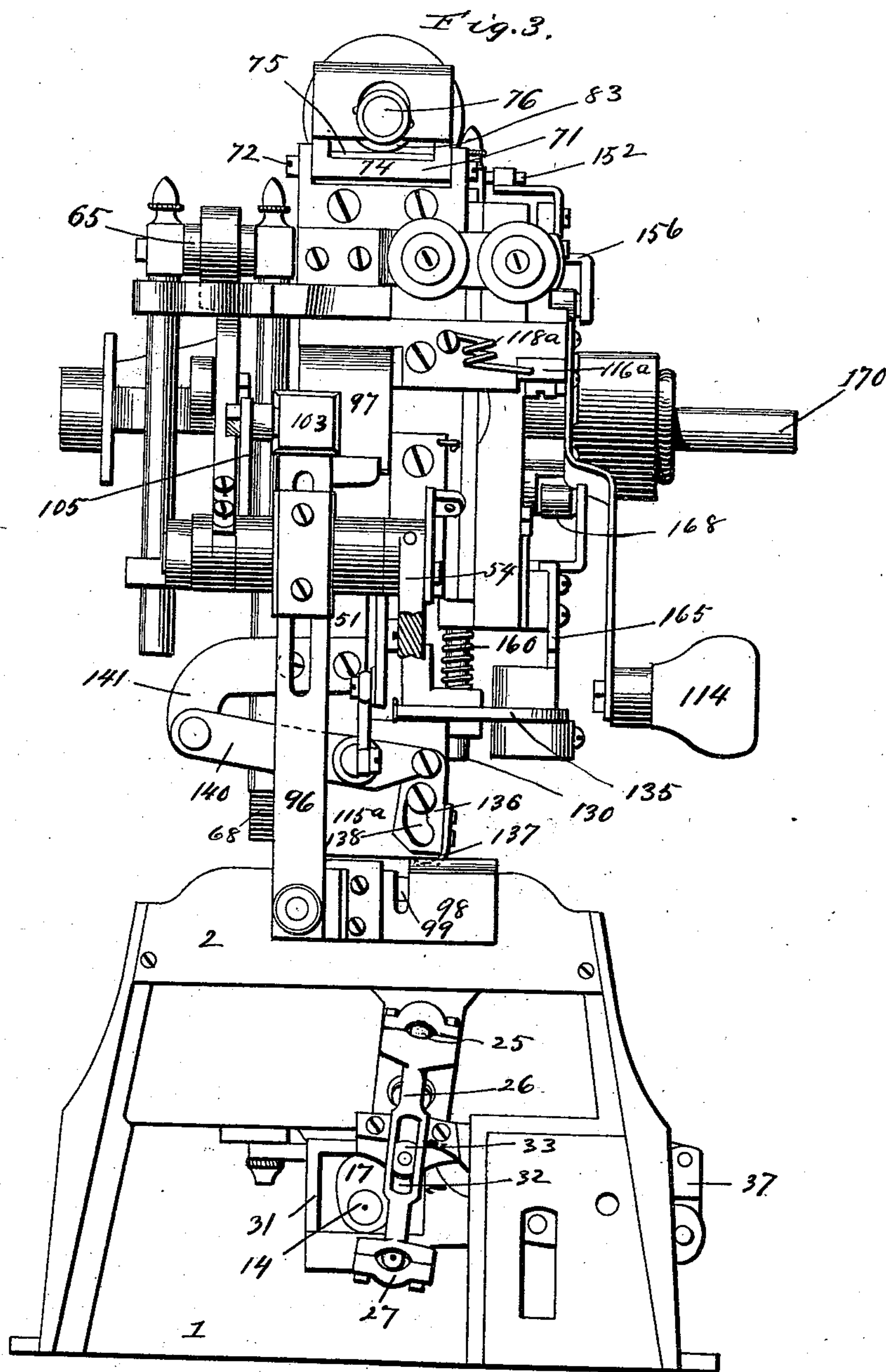
(No Model.)

9 Sheets—Sheet 3.

W. P. GAMMONS, Jr.
MACHINE FOR SEWING HATS.

No. 555,479.

Patented Feb. 25, 1896.



Witnesses:

C. H. Raeder

N. F. Matthews.

Inventor

W. P. Gammons Jr.

BY *James J. Shuck*

Attorney

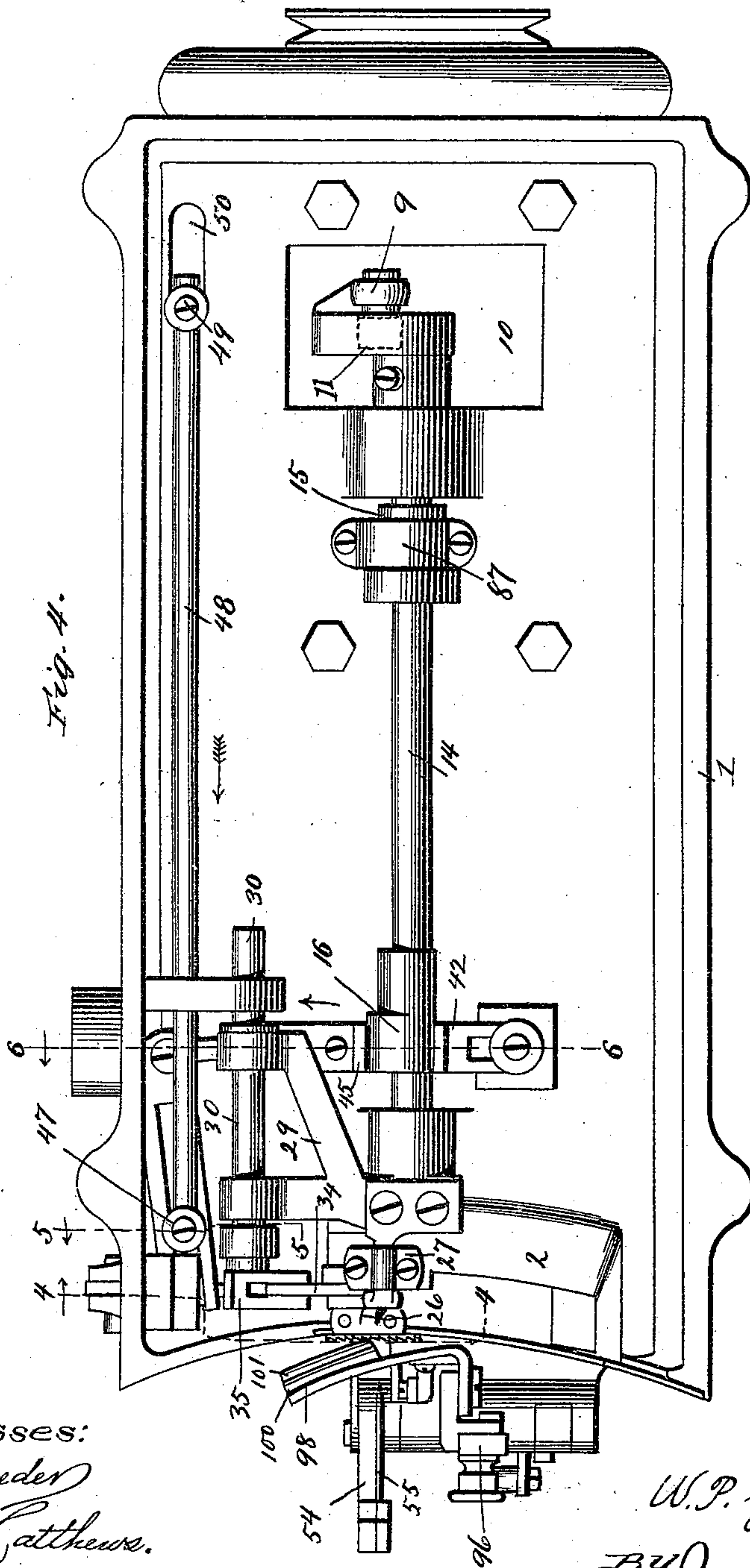
(No Model.)

9 Sheets—Sheet 4.

W. P. GAMMONS, Jr.
MACHINE FOR SEWING HATS.

No. 555,479.

Patented Feb. 25, 1896.



witnesses:
L. H. Raeder
R. F. Matthews.

Inventor
W. P. Gammons Jr.
By *James Shucky*
Attorney

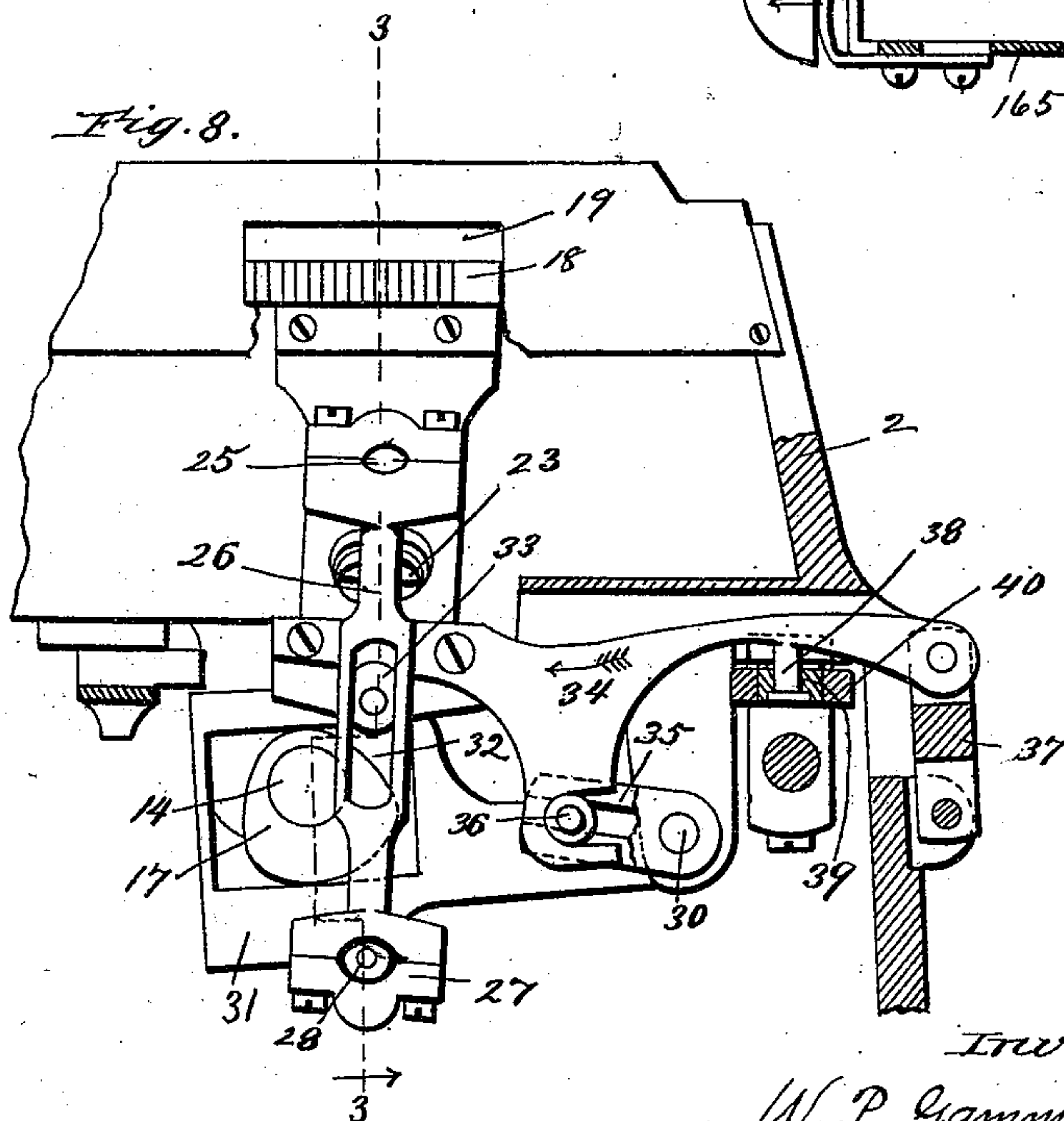
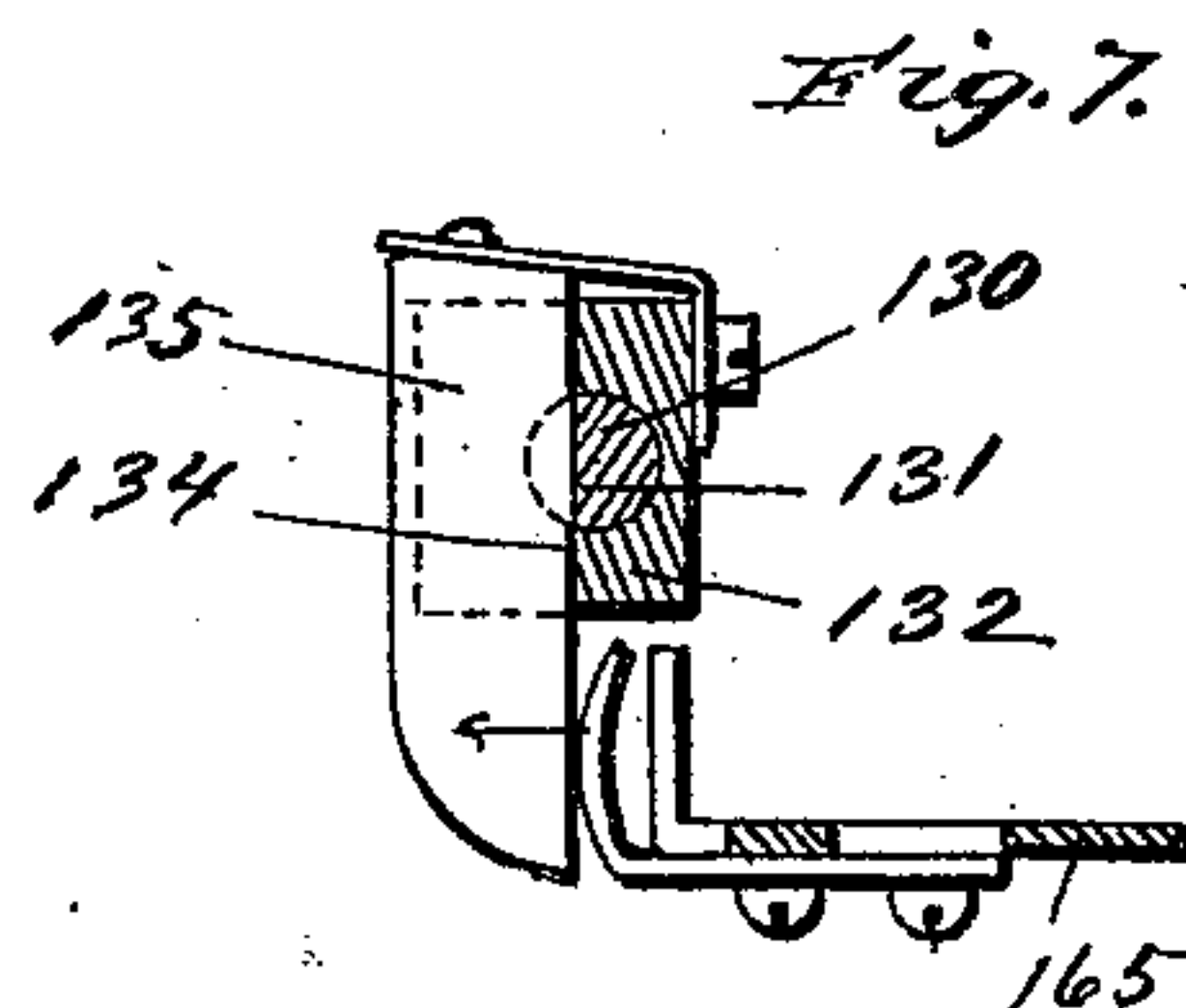
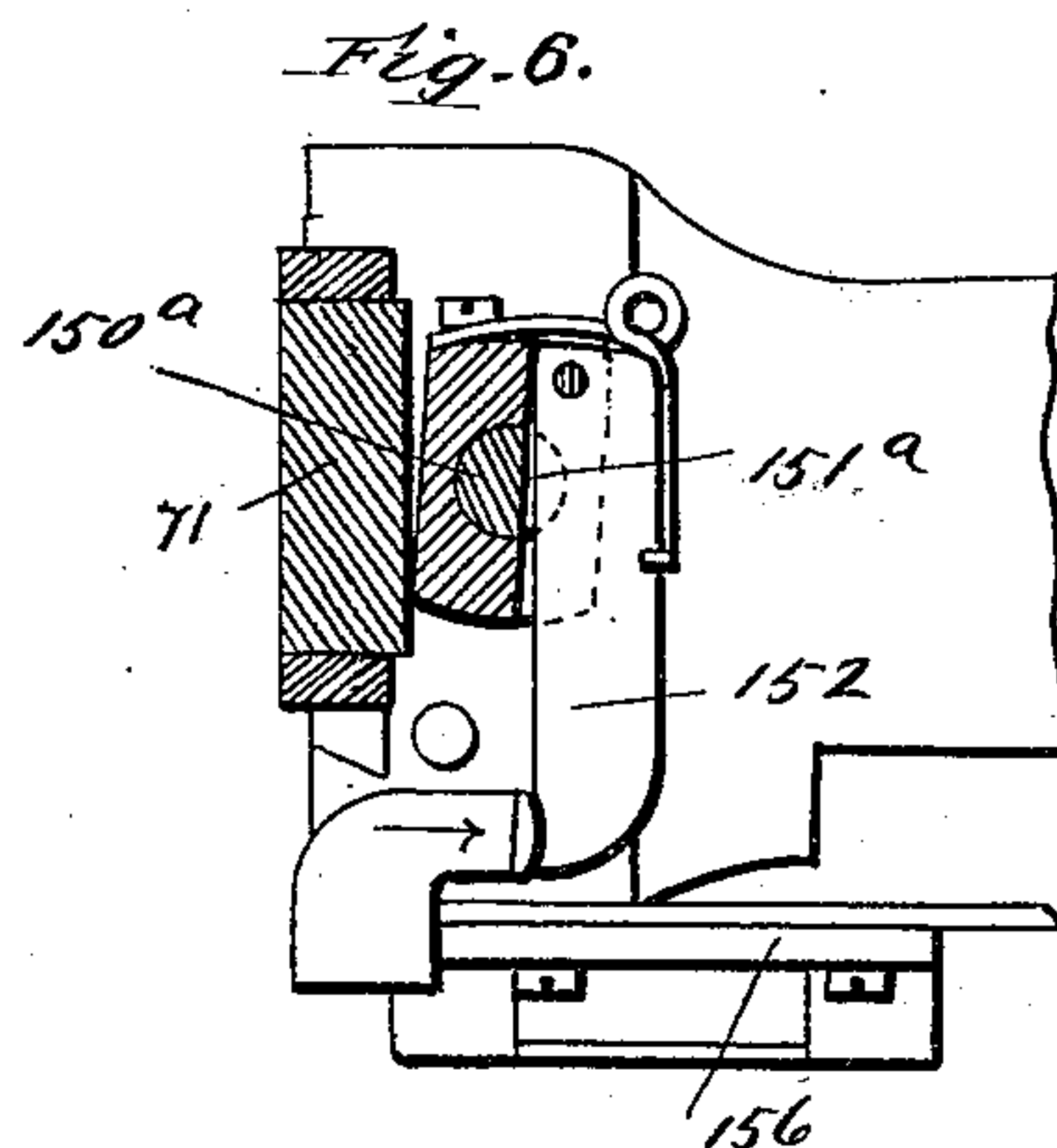
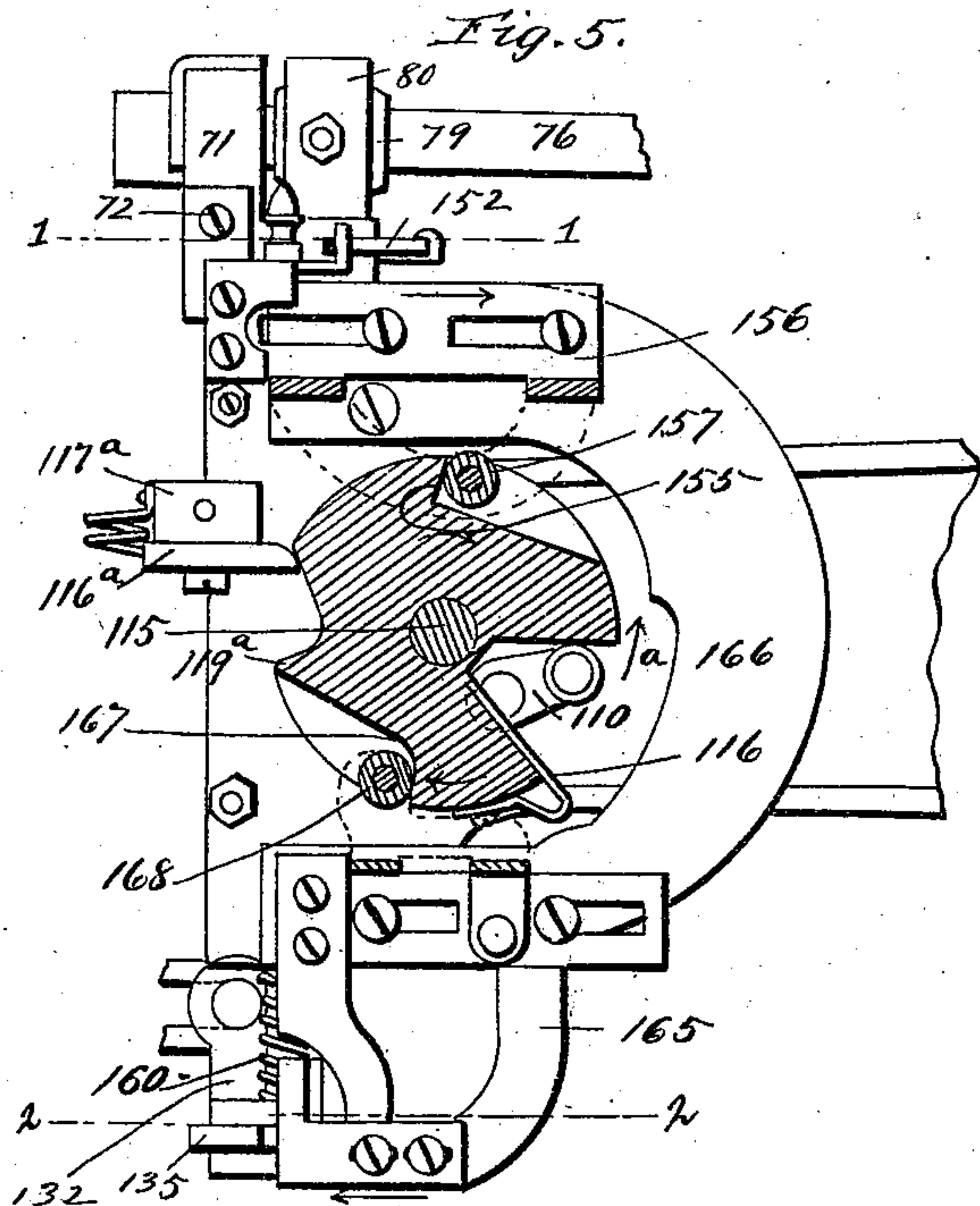
(No Model.)

9 Sheets—Sheet 5.

W. P. GAMMONS, Jr.
MACHINE FOR SEWING HATS.

No. 555,479.

Patented Feb. 25, 1896.



Witnesses:
C. H. Raeder
R. A. Matthews.

Inventor
W. P. Gammons Jr.
By *James J. Shulky*
Attorney

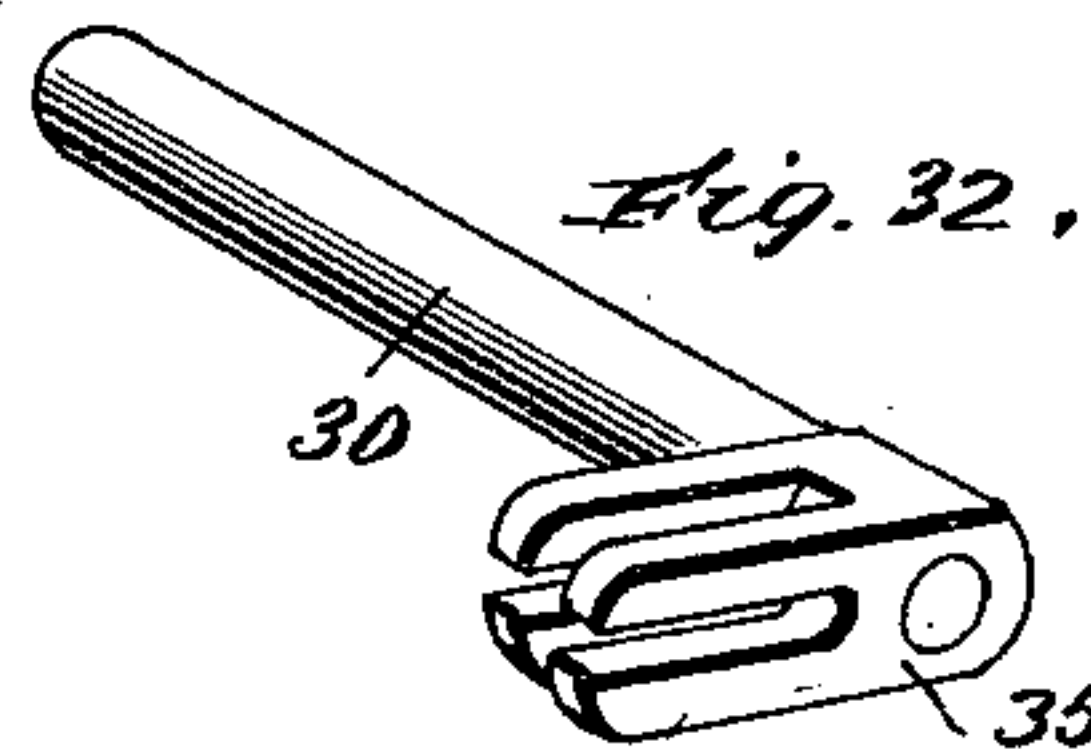
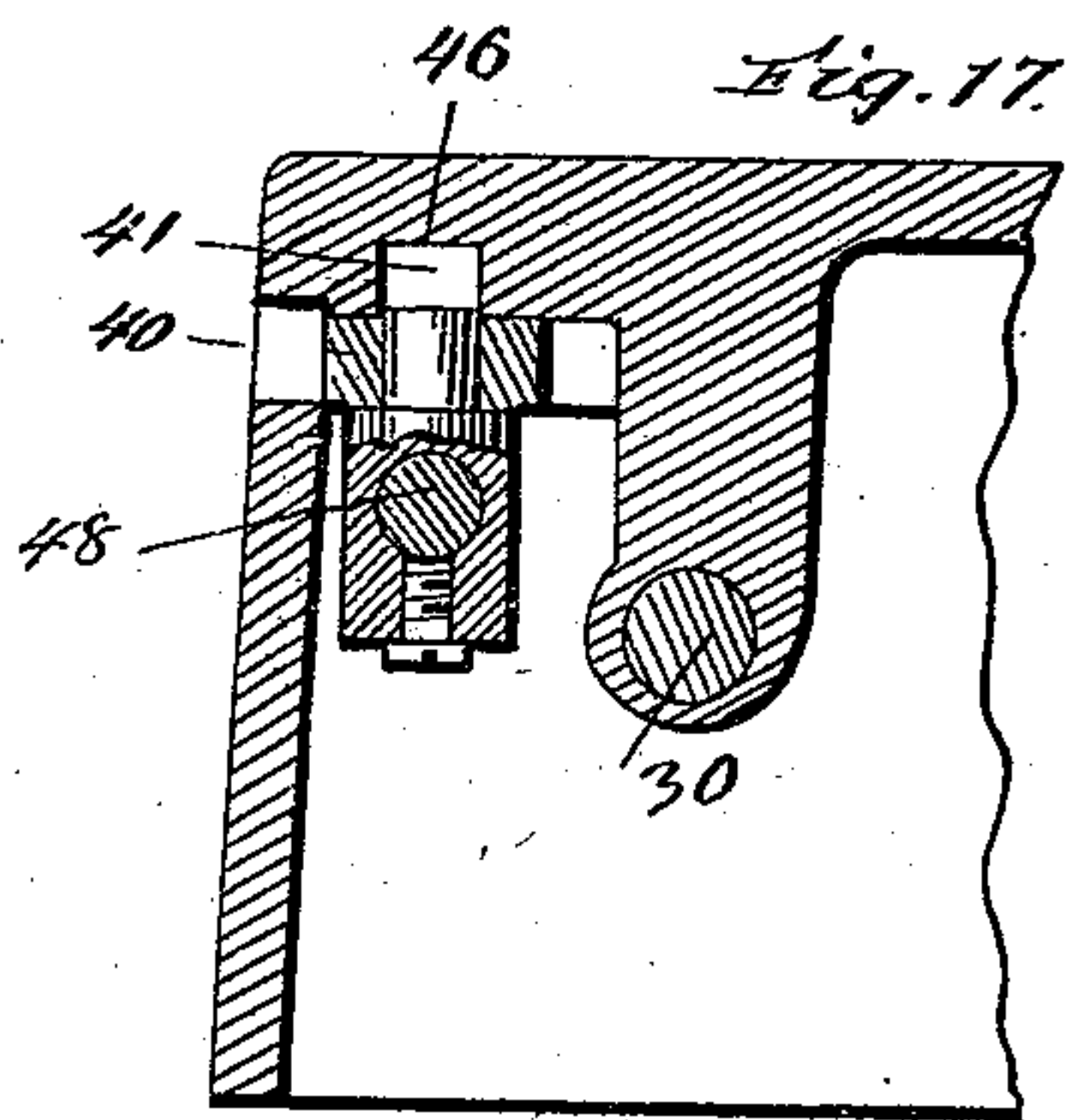
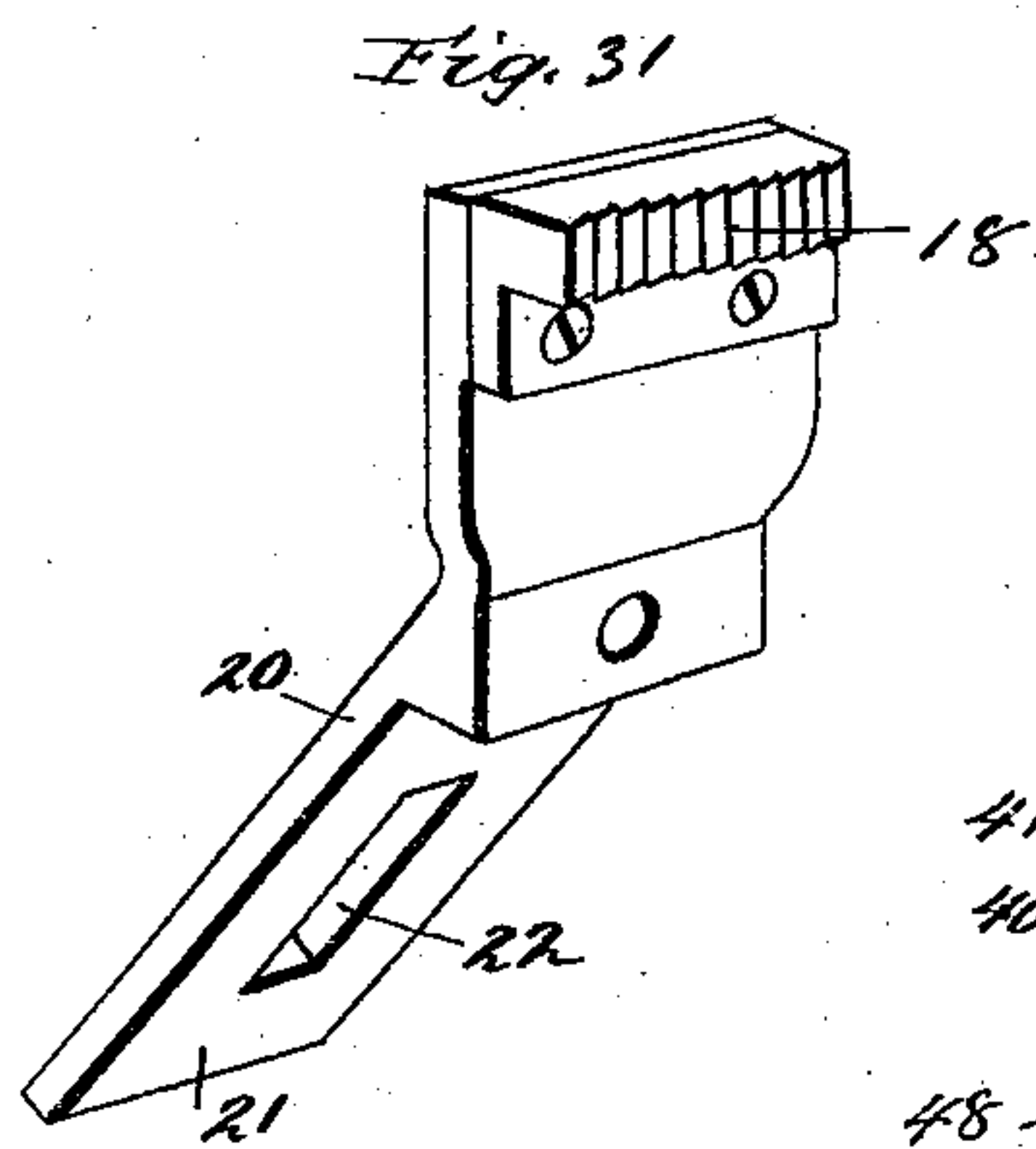
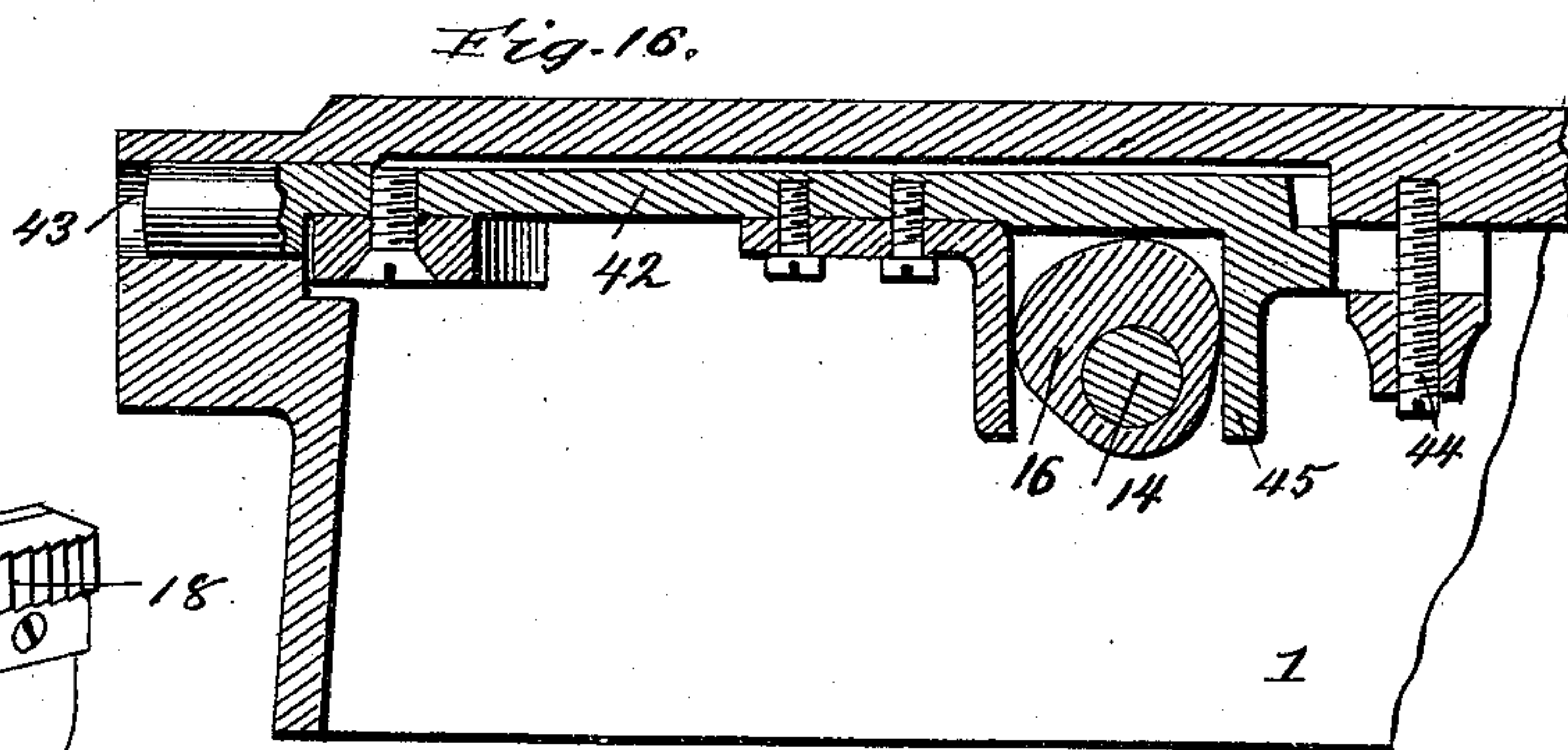
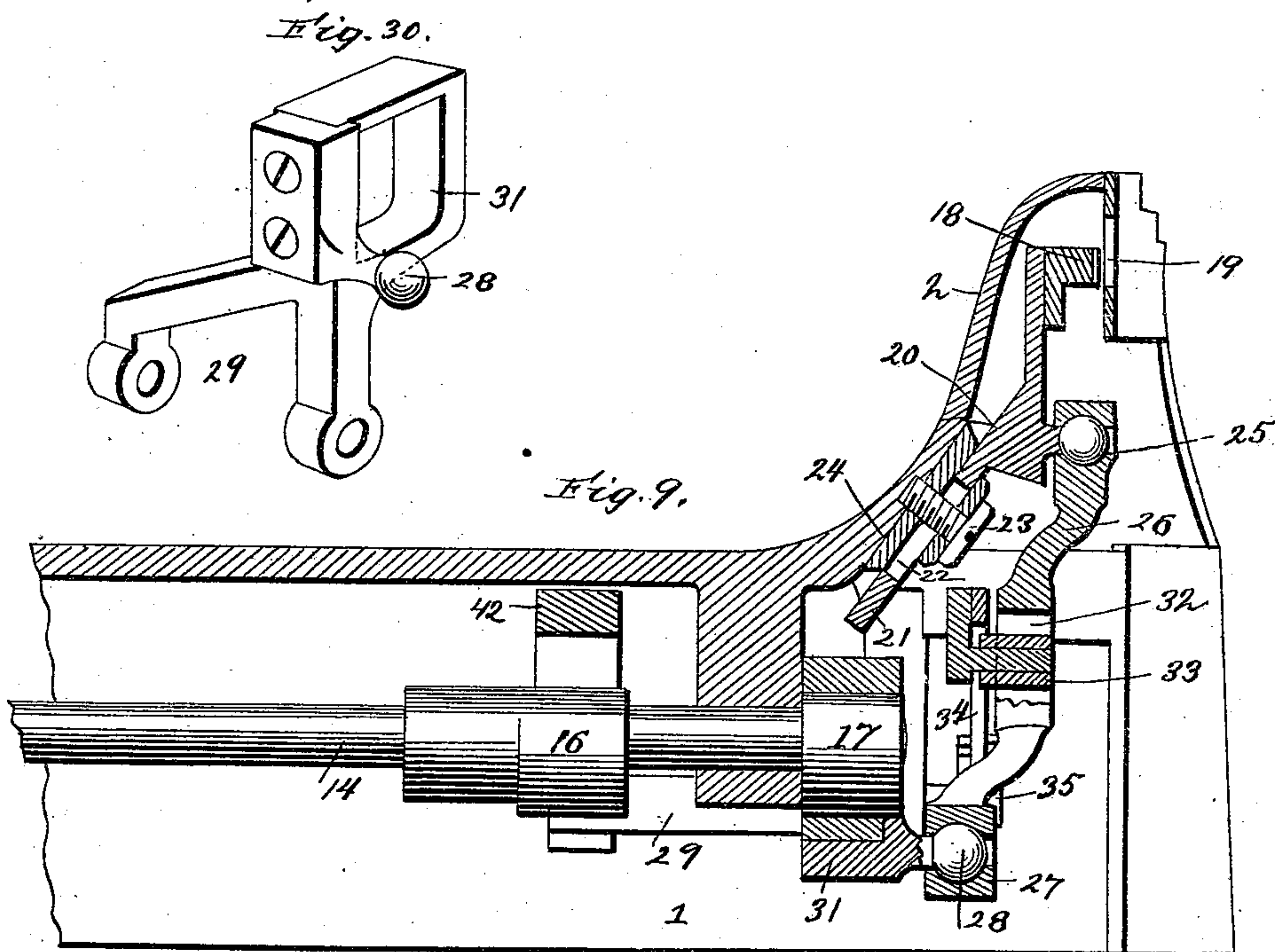
(No Model.)

9 Sheets—Sheet 6.

W. P. GAMMONS, Jr.
MACHINE FOR SEWING HATS.

No. 555,479.

Patented Feb. 25, 1896.



Witnesses:
C. H. Rader
H. F. Matthews

Inventor
W. P. Gammons Jr.
By *James J. Shuey*
Attorney

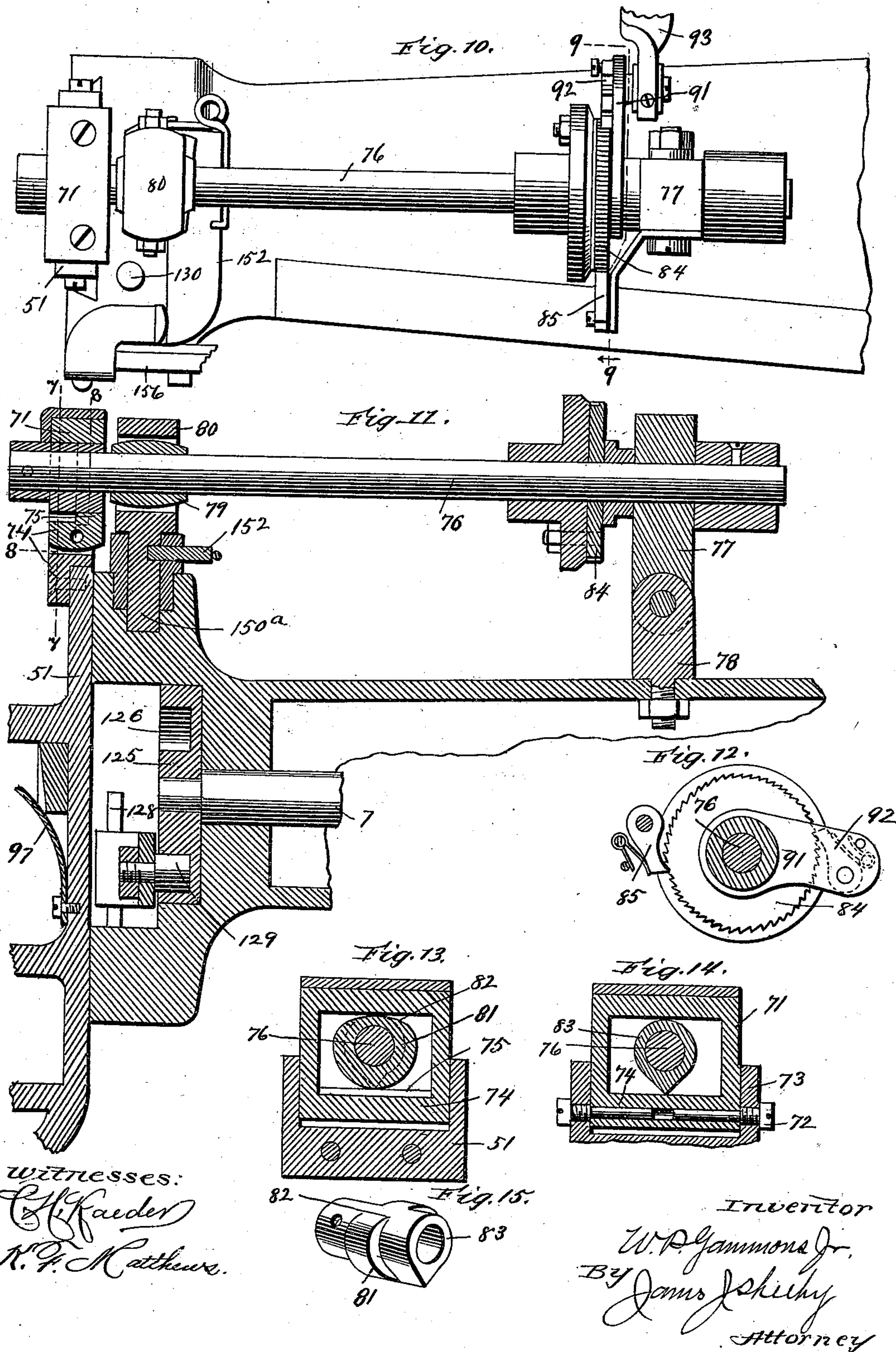
(No Model.)

W. P. GAMMONS, Jr.
MACHINE FOR SEWING HATS.

9 Sheets—Sheet 7.

No. 555,479.

Patented Feb. 25, 1896.



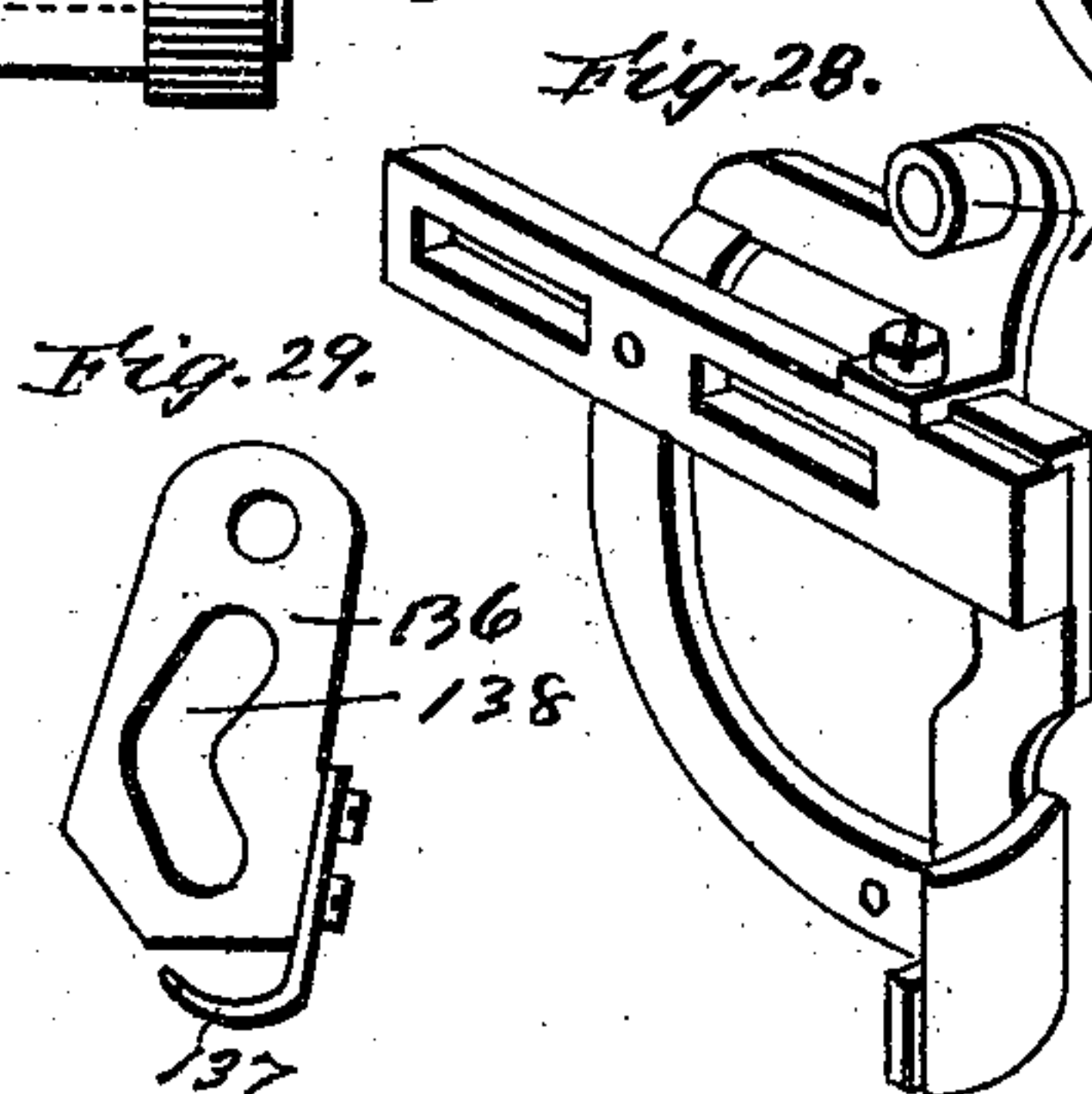
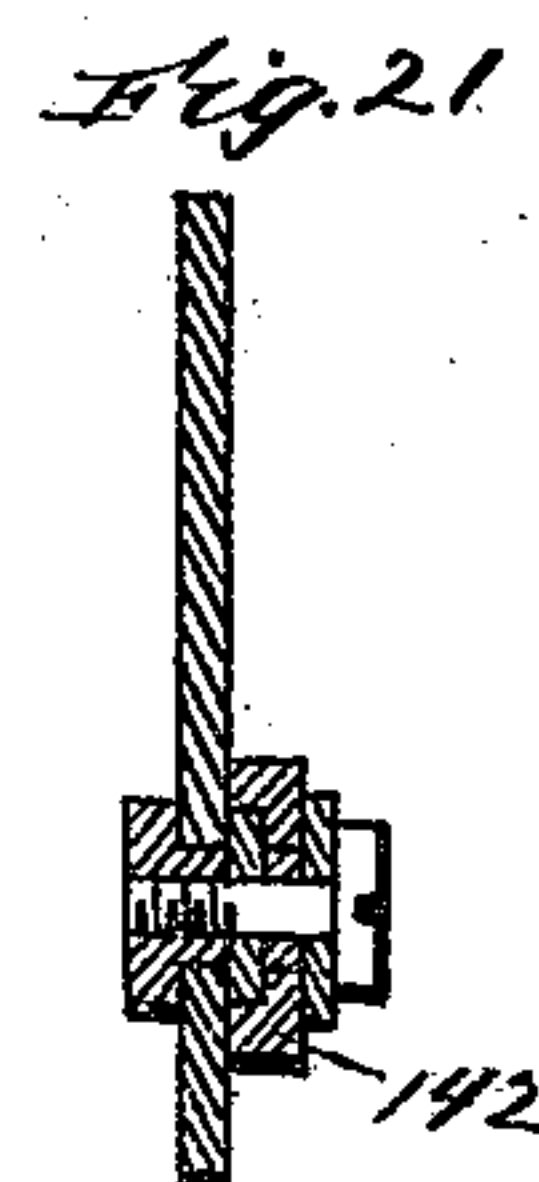
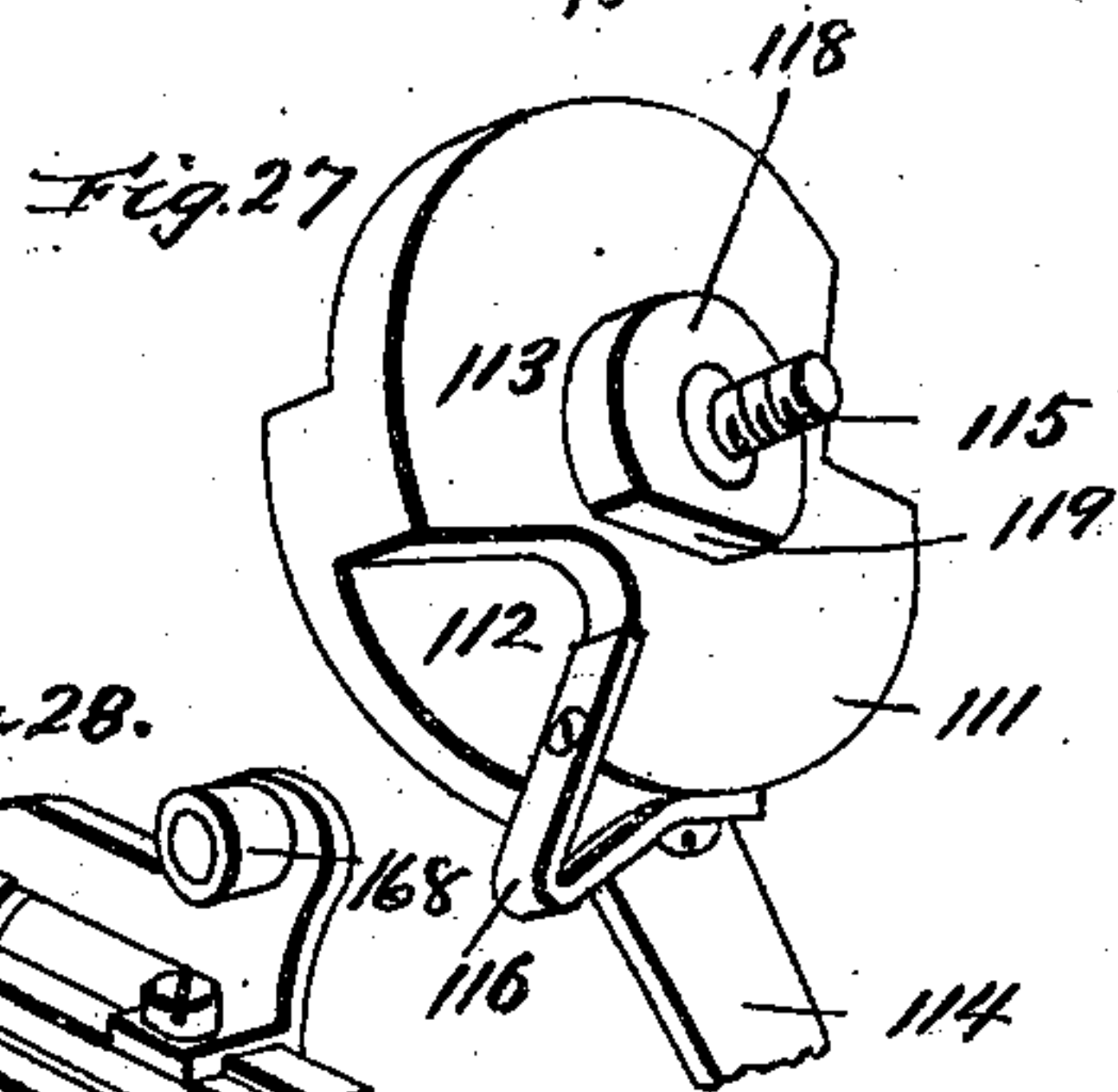
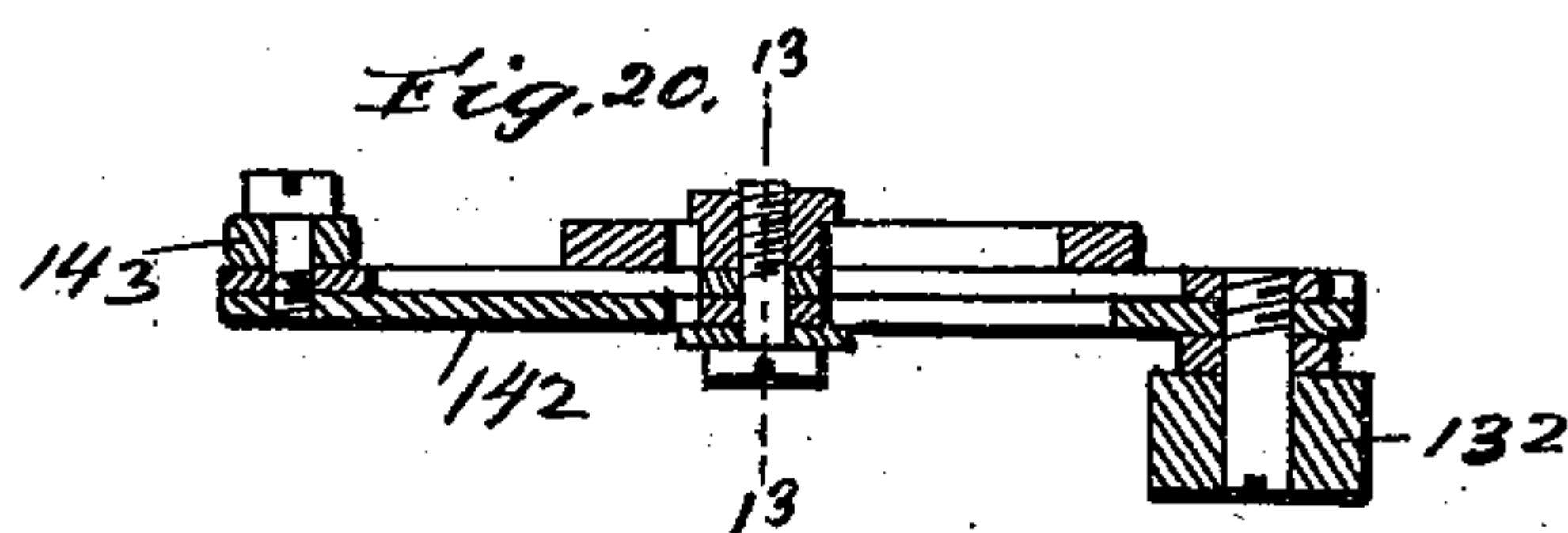
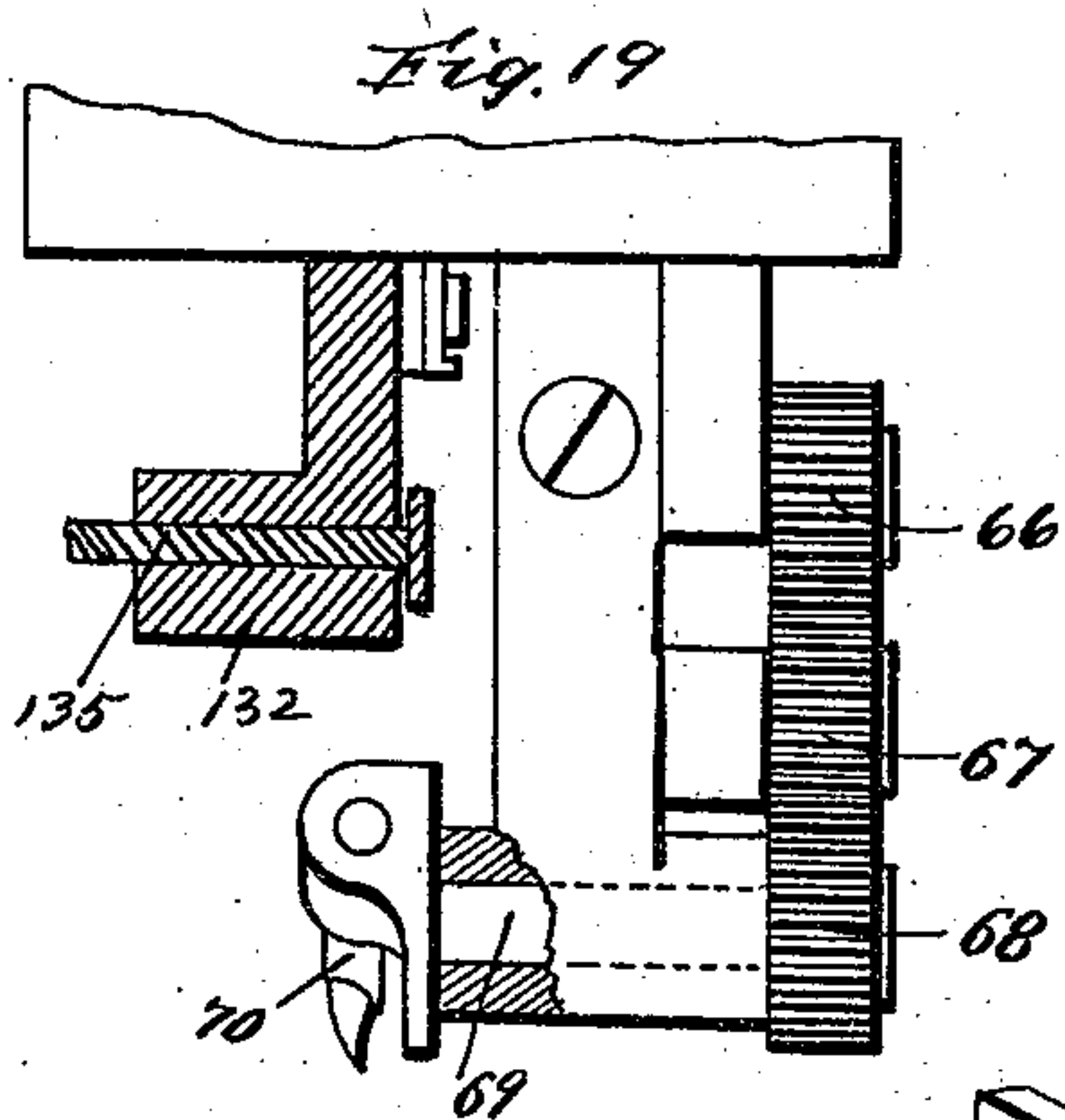
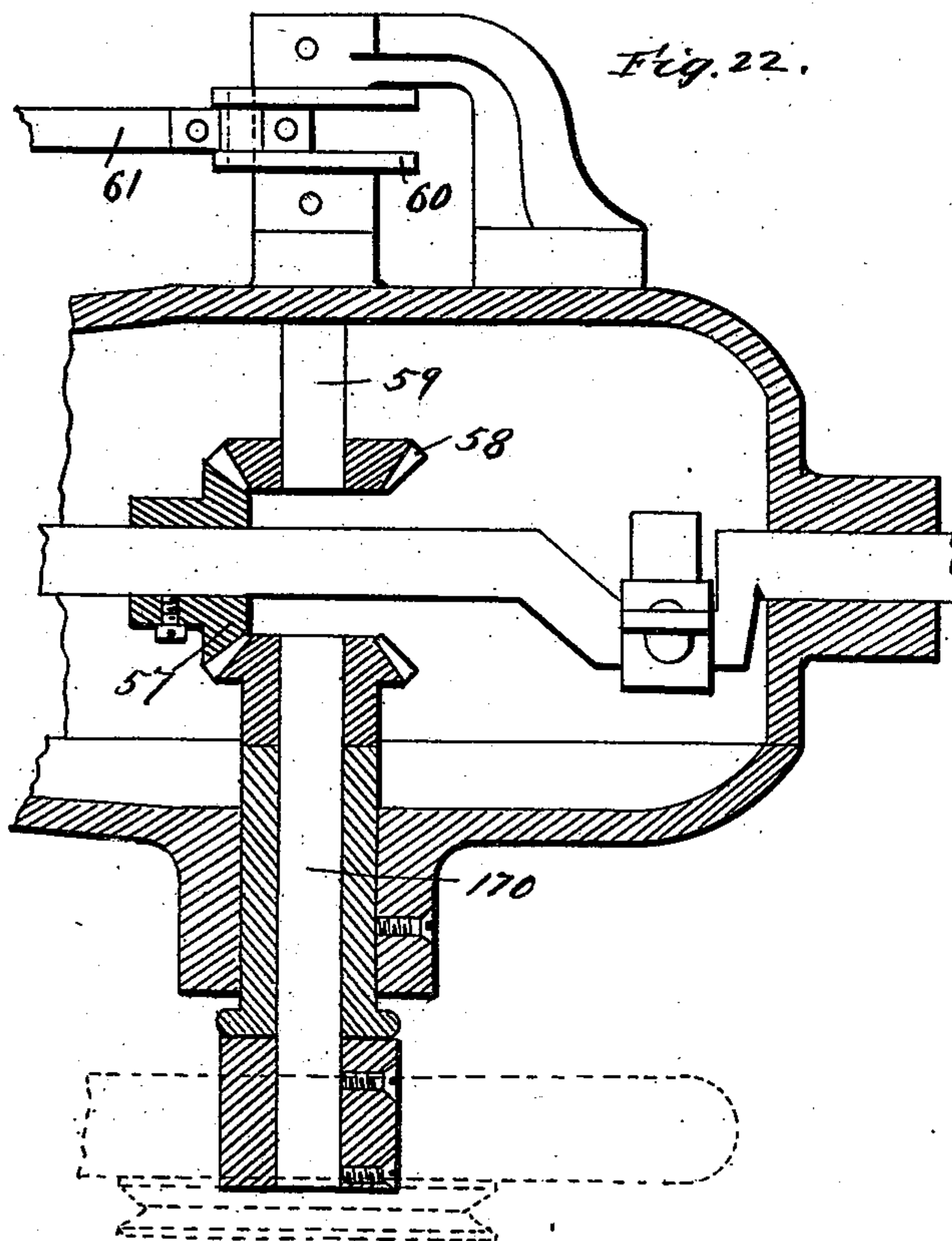
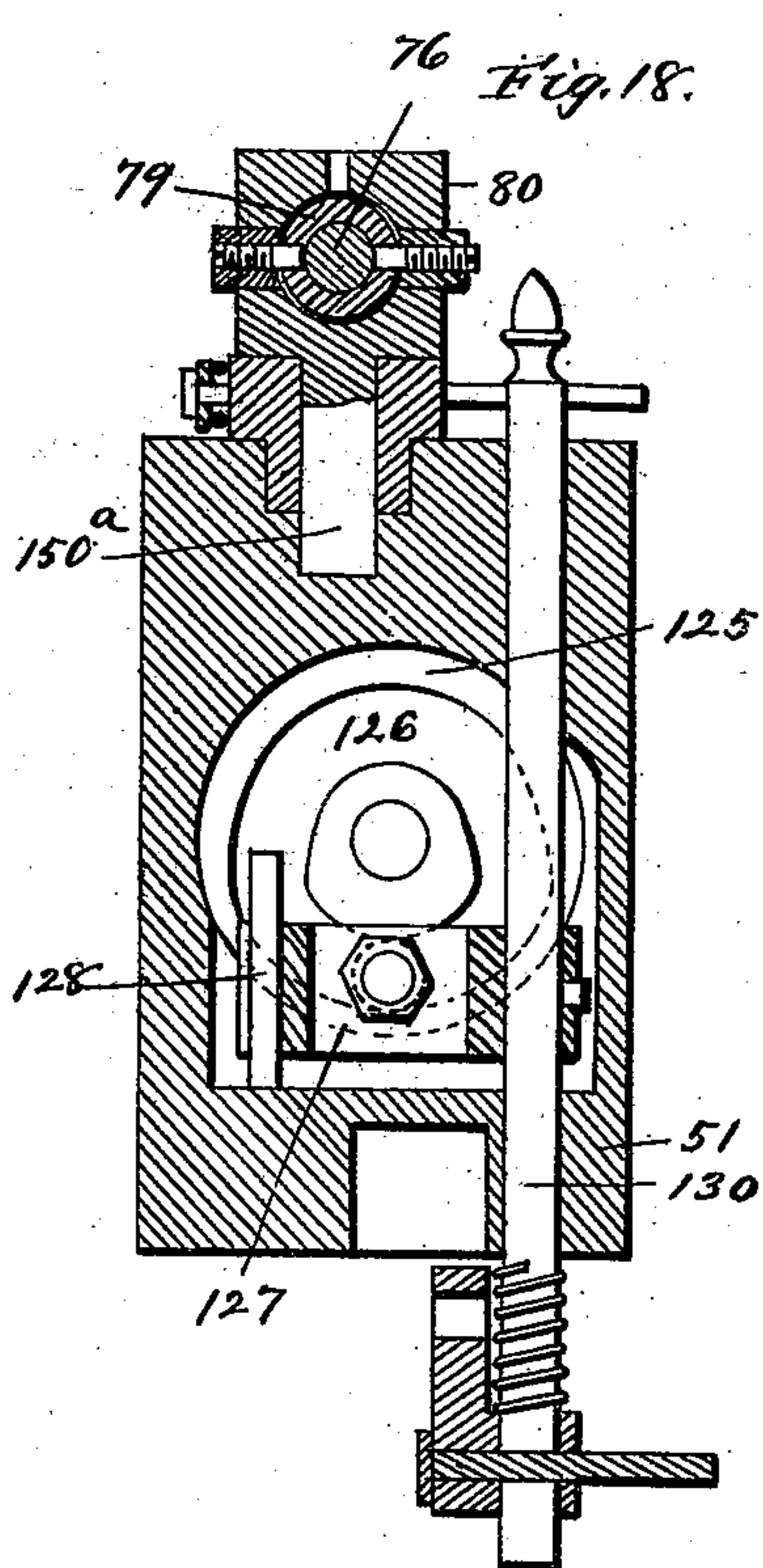
(No Model.)

9 Sheets—Sheet 8.

W. P. GAMMONS, Jr.
MACHINE FOR SEWING HATS.

No. 555,479.

Patented Feb. 25, 1896.



Witnesses:
C. Raeder
N. F. Matthews

Inventor
W. P. Gammons Jr.
By *James J. Shuck*
Attorney

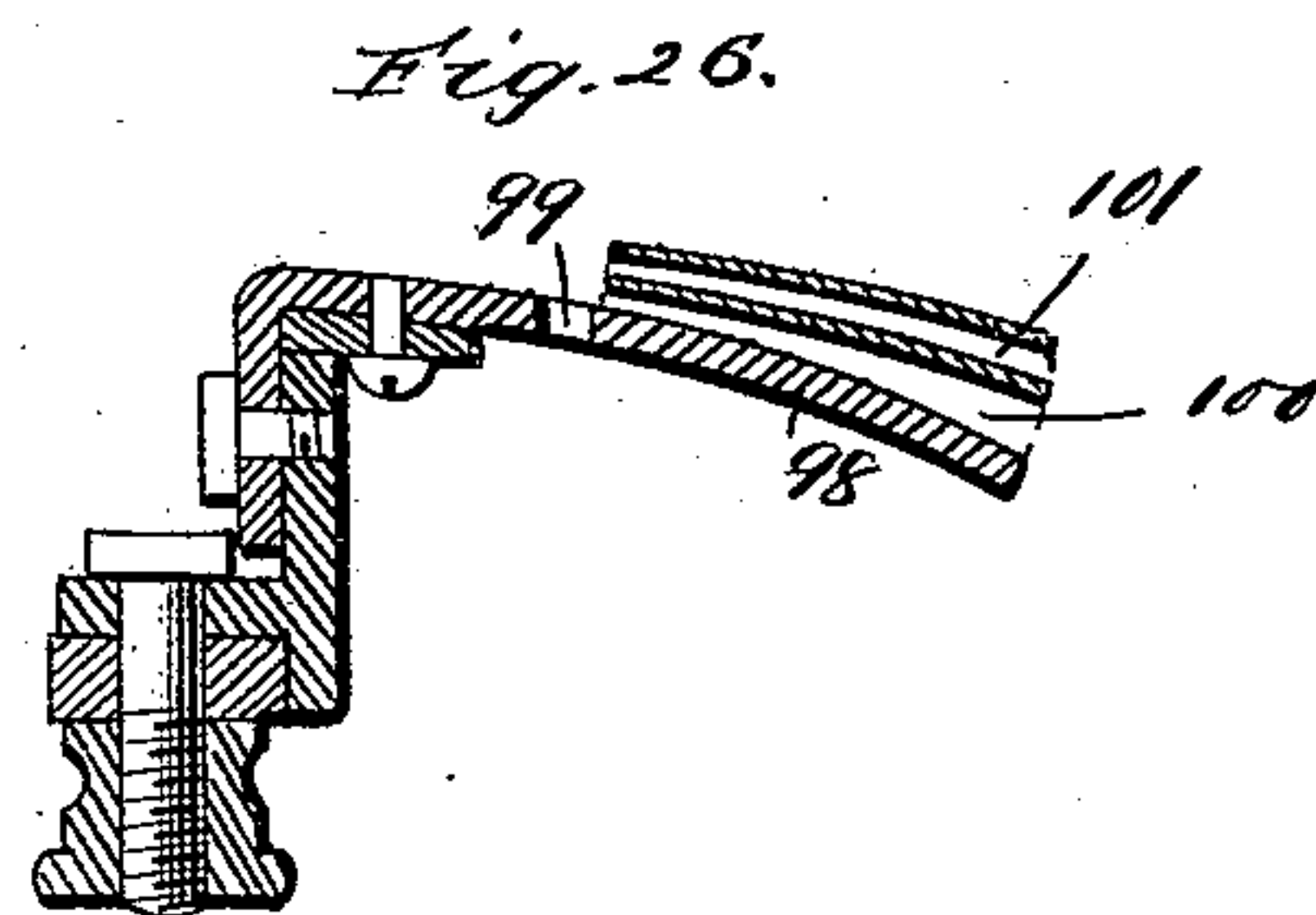
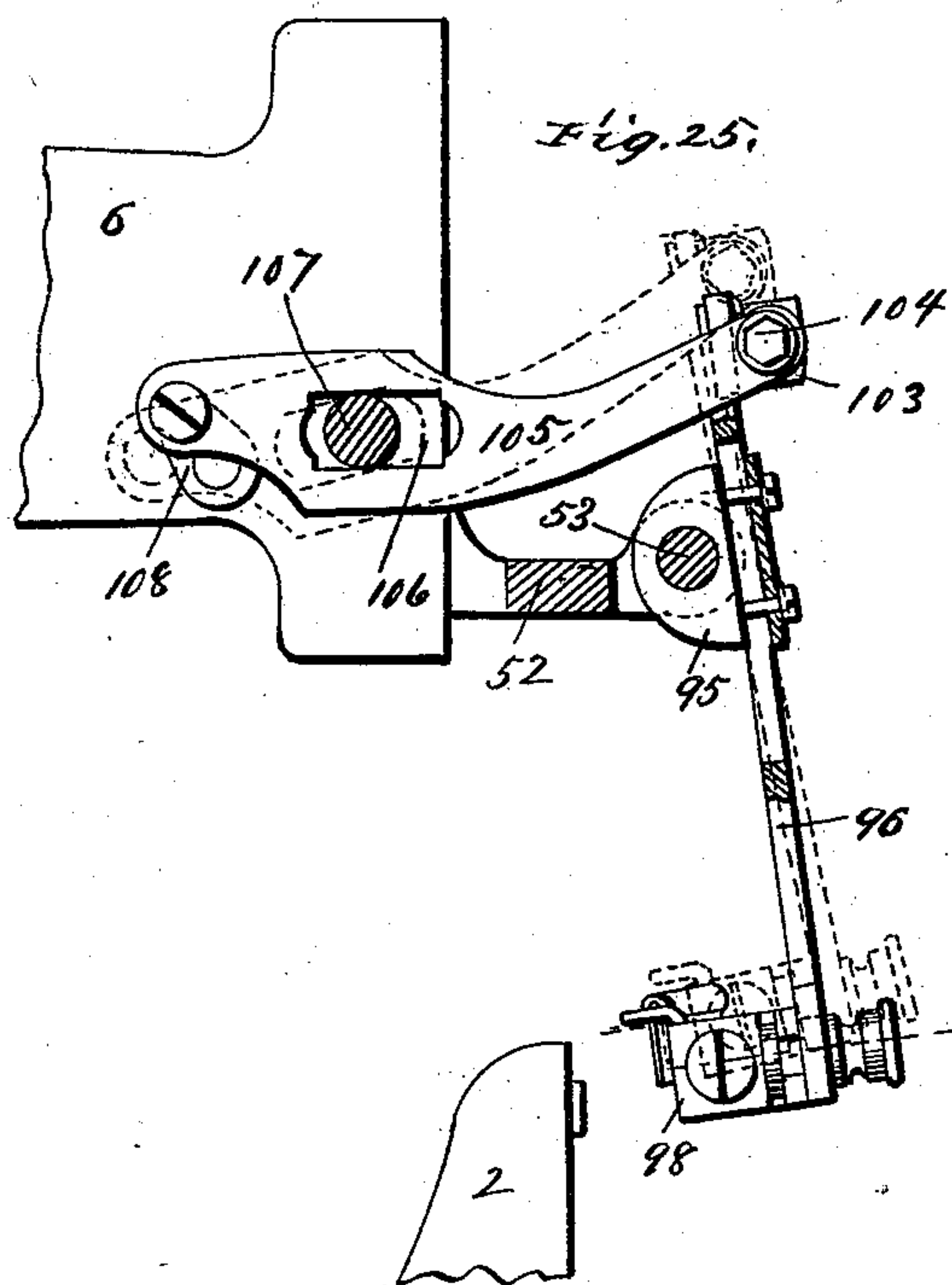
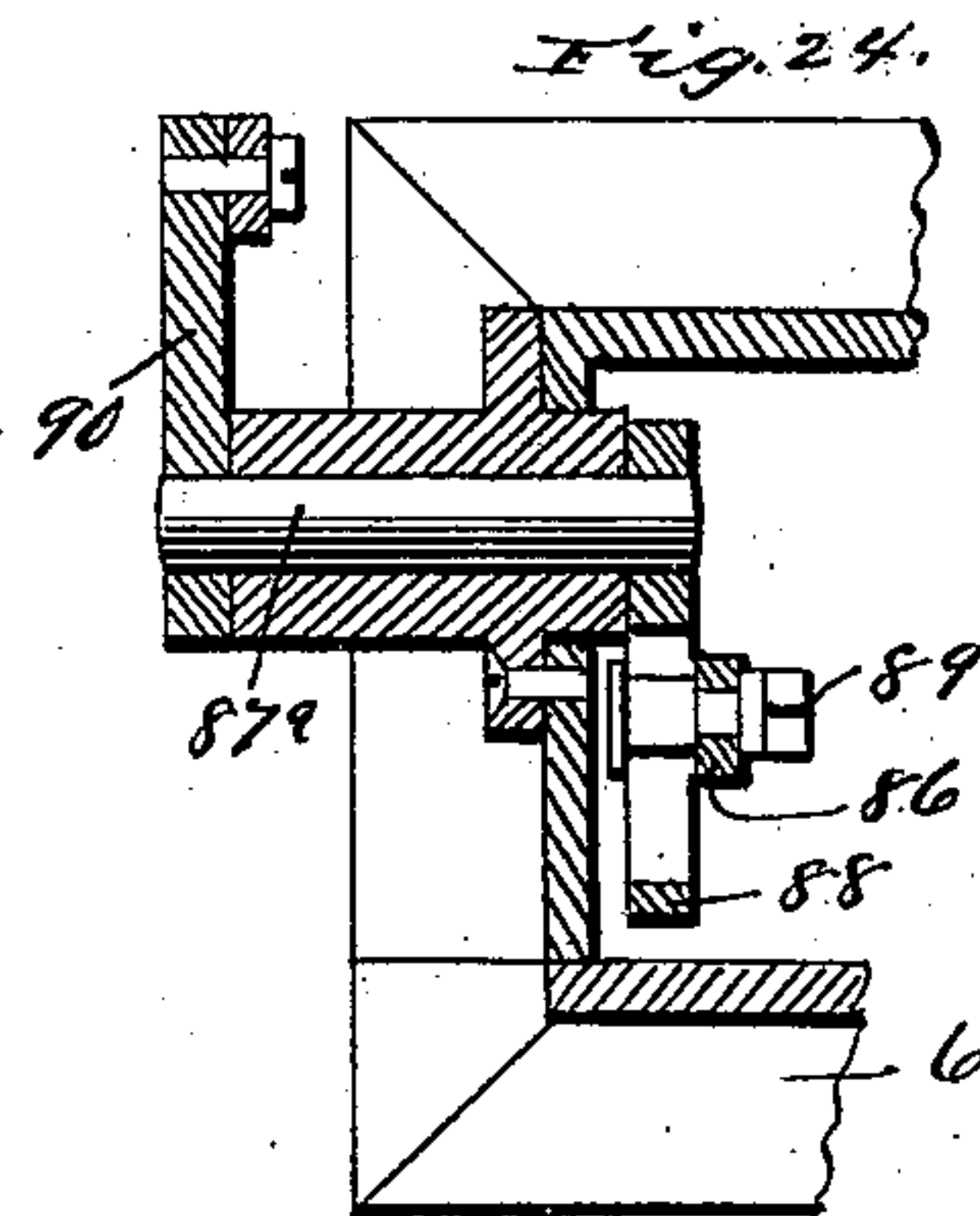
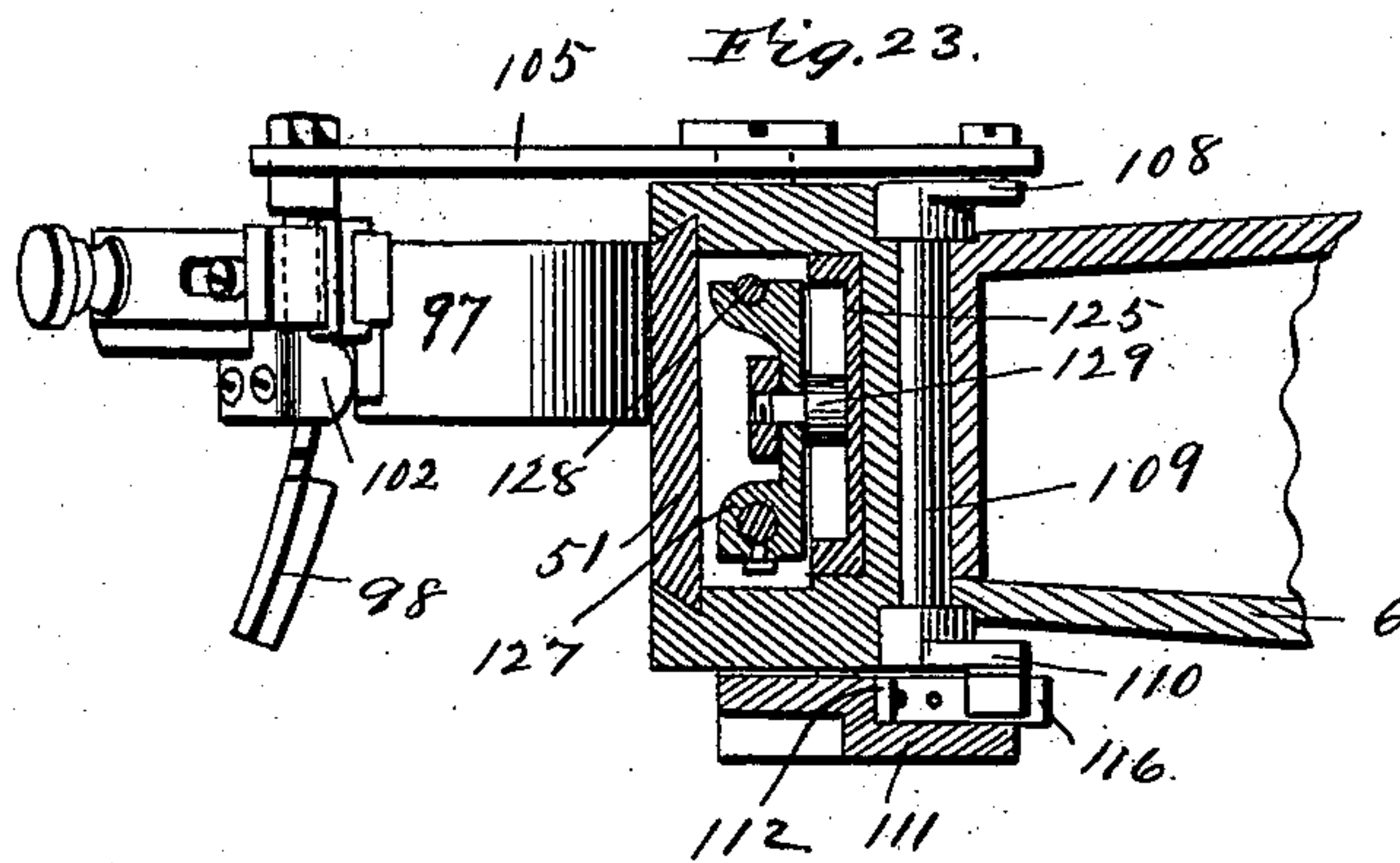
(No Model.)

9 Sheets—Sheet 9.

W. P. GAMMONS, Jr.
MACHINE FOR SEWING HATS.

No. 555,479.

Patented Feb. 25, 1896.



Witnesses:
C. H. Roeder
R. F. Matthews.

Inventor
W. P. Gammons Jr.
BY James J. Sheehy
Attorney

UNITED STATES PATENT OFFICE.

WELCOME P. GAMMONS, JR., OF NEW YORK, N. Y., ASSIGNOR OF ONE-HALF
TO GEORGE S. BRACHER, OF RAHWAY, NEW JERSEY.

MACHINE FOR SEWING HATS.

SPECIFICATION forming part of Letters Patent No. 555,479, dated February 25, 1896.

Application filed May 13, 1895. Serial No. 549,148. (No model.)

To all whom it may concern:

Be it known that I, WELCOME P. GAMMONS, Jr., a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Machines for Uniting Sweat Leathers, Cloths, and Reeds, and Sewing the Same into Hats; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in sewing-machines, and more particularly to machines for sewing sweat-bands into hats; and it has for its main object to provide a machine adapted to dress or cover the edge of a sweat-band or connect a sweat-band and reed-cloth together by stitches placed comparatively close together, and connect the said sweat-band or sweat-band and reed-cloth to a hat by isolated stitches or stitches arranged a great distance apart, all in one continuous operation.

Other objects and advantages of the invention will be fully understood from the following description and claims when taken in conjunction with the annexed drawings, in which—

Figure 1 is a perspective view of the machine embodying my invention. Fig. 2 is an elevation of the side of the machine opposite to that shown in Fig. 1, with the hat holding or adjusting plate removed. Fig. 3 is a front elevation, on a scale larger than that of Figs. 1 and 2, of the machine with the hat-holding plate removed. Fig. 4 is an inverted plan view. Fig. 5 is a detail side elevation, with parts in section, of a portion of the mechanism through the medium of which the vertically-slidable frame carrying the stitch-forming mechanism is raised to permit of a ready interposition of the hat between the needle-plate of said frame and the raised portion of the base of the machine. Figs. 6 and 7 are detail sections on the lines 1 1 and 2 2, respectively, of Fig. 5. Fig. 8 is a detail front elevation with parts broken away illustrating a portion of the mechanism for feeding the materials forwardly. Fig. 9 is a section taken in line 3 3 of Fig. 8. Fig. 10 is a detail plan view. Fig. 11 is a detail vertical longitudinal

section. Fig. 12 is a detail section taken on line 9 9 of Fig. 10. Figs. 13 and 14 are detail sections taken on lines 7 7 and 8 8 of Fig. 11, respectively. Fig. 15 is a detail perspective view of the cam for raising the vertical rectilinearly-slidable frame. Fig. 16 is a detail section on the line 6 6 of Fig. 4. Fig. 17 is a detail section on line 5 5 of Fig. 4. Fig. 18 is a detail section on line 10 10 of Fig. 2. Fig. 19 is a detail section on line 11 11 of Fig. 2. Fig. 20 is a detail section taken on line 12 12 of Fig. 1. Fig. 21 is a detail section on line 13 13 of Fig. 20. Fig. 22 is a detail section illustrating the shaft on which the belt-wheel is fixed when it is desired to have said wheel at the side of the machine instead of at the end, and the gearing between said shaft and the main shaft. Figs. 23, 24, 25, and 26 are minor detail sections hereinafter referred to; and Figs. 27, 28, 29, 30, 31, and 32 are perspective views of parts as they appear when disconnected from the machine.

In the said drawings, similar numerals designate corresponding parts in all of the views, referring to which—

1 indicates the base of the machine, which has the upwardly-extending or raised portion 2 at its forward end, upon which a hat-brim may be supported.

3 indicates the curvilinear plate for adjusting and holding a hat in proper position while it is being sewed, said plate being pivotally connected at its upper end to opposite sides of the base portion 2 and having its lower end adjustably connected to the base 1, preferably by a binding-screw 4, taking through a curved slot 5, so that the hat may be held at various angles of inclination while being sewed.

6 indicates the hollow, overhanging, and fixed arm, and 7 the main shaft which is journaled in said arm, as shown. This shaft 7 is provided above the hollow standard of the arm 6 with a crank 8, which is connected to and serves to impart a rocking motion to an upright lever 9, (see Figs. 1 and 4,) for a purpose presently described. The said lever 9, which takes through a slot 10 in base 1, has its lower end connected to a slide-block 11, arranged in a groove 12 of a crank 13, at the rear end of a rotary shaft 14, to which said lever is designed to transmit motion. This

shaft 14 is provided adjacent to its rear end with an eccentric 15, for a purpose presently described, and adjacent to its forward end and at its forward end said shaft is provided with cams 16 17, as better shown in Figs. 4, 9, and 16 of the drawings.

18 indicates the toothed bar which is designed to extend through a slot 19 in the front of the base (see Fig. 9) and engage and feed the materials forwardly, and 20 indicates the plate of approximate obtuse-angle form to which the bar 18 is connected. This plate 20 is provided in its lower portion 21 with a slot 22, through which takes the bolt 23 for connecting said plate to the inclined portion 24 of the base 1, in such a manner as to permit the plate to move up and down and swing laterally, as presently described. At the lower end of its vertical portion the plate 20 is provided with a ball 25, to which is connected the upper end of the arm 26, through the medium of which motion is transmitted to the said plate and the feed-bar 18 carried thereby. Said arm 26 is provided at its lower end with a socket 27, and in this socket is arranged a ball 28, which is preferably formed integral with the arm 29, which is pivotally mounted upon a fixed rod 30 (see Fig. 4) and is provided in addition to the ball 28 with a frame 31, preferably of rectangular form, which receives and is engaged by the cam 17 at the forward end of the rotary shaft 14, whereby it will be seen that when said shaft is rotated and the lever 29 is rocked, an up-and-down reciprocatory movement will be transmitted to the plate 20, carrying the feed-bar 18, and as the lower portion 21 of the said plate bears against the inclined portion 24 of the base 1 the plate will be guided so that when it is moved up the feed-bar 18 will move forwardly through the slot 19 in the base, so as to engage the materials, and when it is moved downwardly the feed-bar 18 will recede through the slot 19, or move away from the materials, so as not to abrade or otherwise damage the same as it returns to the starting-point of its forward stroke.

The arm 26, as better shown in Fig. 8 of the drawings, is provided at an intermediate point of its length with a slot 32. In this slot 32 is loosely arranged a block 33, which is pivotally mounted adjacent to the forward end of a reciprocatory bar 34, which has a depending portion arranged in the vertical slot of the head 35 of rod 30, and also has lateral studs 36, arranged in the lateral slots of said head 35, and is loosely connected at its outer end to an arm 37, which in turn is loosely connected with the base 1 on the outside of the same, as better shown in Figs. 1, 3, and 8 of the drawings. Said bar 34 is further provided at an intermediate point of its length with a depending lug 38, (better shown in Fig. 8,) which takes into the longitudinal slot 39 of the lever 40, through the medium of which the bar 34 is reciprocated. This lever 40 is fulcrumed upon a pin 41, and it is piv-

otally or loosely connected at its rear end with a transverse slide 42, (see Figs. 4 and 16,) which has one of its ends extended through a guide-aperture 43 in the base 1, and may have its portion adjacent to said end reduced in width, as shown in Fig. 4, and also has its opposite end slotted to receive a guide and retaining-screw 44, and is provided at an intermediate point in its length with depending branches 45 arranged on opposite sides of the cam 16 of the shaft 14 and designed to be engaged by the same.

The several parts thus far described are so arranged and timed that when the feed-bar 18 has been moved to its uppermost and outermost position through the medium of the lever 29, cam 17 on shaft 14, and arm 26, the cam 16 will move the slide 42 in the direction of the arrow (see Fig. 4) and will rock the lever 40, so as to move the bar 34 in the direction of the arrow in Fig. 8, and the arm 26 and the upper portion of the plate 20 and the feed-bar 18 in a corresponding direction, in order to enable said feed-bar to move the materials which are pressed against it, as presently described, forwardly. After the feed-bar 18 has reached the end of its forward stroke and has moved inwardly and through the opening 19 and downwardly the cam 16 will move the slide 42, lever 40, and bar 34 in the direction opposite to that indicated by arrow in Figs. 4 and 8, and in consequence will return the feed-bar 18 to the point where it commences its forward stroke.

It is desirable to have the throw of the feed-bar 18 adjustable, so that the length of its throw and the spaces between the stitches formed by the stitch-forming mechanism presently described may be increased or diminished when desired, and to this end I arrange the square upper end of the fulcrum-pin 41, which extends loosely through the slot 39 of the lever 40, in a longitudinal guideway or groove 46, formed in the under side of the top of the base 1, and also arrange said pin 41 to receive a rod 48, to which it is fixed by a pin 47. This rod 48 is provided at its rear end with a binding-screw 49, which extends through a slot 50 in the base 1 and is designed to bear upon said base and adjustably fix the rod 48 against movement.

When the rod 48 and its fulcrum-pin 41 are moved forwardly or in the direction of the arrow, (see Fig. 4,) the portion of the lever 40 in front of the fulcrum-point will be shortened, and in consequence the stroke of the forward portion of the lever and of the plate 20, carrying the feed-bar 18, will be shortened, while when the fulcrum-pin 41 is moved rearwardly the portion of the lever 40 in front of the fulcrum-pin will be lengthened and the stroke of the forward portion of said lever and plate 20 proportionately increased.

Mounted in suitable ways in the face of the overhanging fixed arm 6 is the vertically-slidable frame 51, which is provided on its outer side with the forwardly-extending

bracket 52. In this bracket 52 is journaled a rock-shaft 53, upon one end of which is fixed the swinging arm 54 of the rocking or reciprocating needle (or needles) 55, while on the other end is fixed a crank-arm 56, for a purpose presently described.

Fixed at a suitable point on the main shaft 7 is a beveled gear-wheel 57, which meshes with a pinion 58 upon a short transverse shaft 59, which extends through the wall of the arm 6 and carries a disk 60 at its outer end, to which is eccentrically connected one end of a pitman 61, which pitman is connected at its forward end to the crank-arm 56, whereby it will be seen that when the main shaft 7 is rotated the needle 55 will be reciprocated. The crank-arm 56 is provided at its upper end with a head 62, in which is formed a cam-slot 63, designed to impart a vertically-reciprocatory movement to a rack-bar 64, through the medium of the pin 65, carried by the said rack-bar 64, which rack-bar meshes with the uppermost of three meshing pinions 66 67 68, the lowermost pinion 68 of which is fixed upon one end of the shaft 69 of the loop-taker 70, which shaft is journaled in the frame 51. It will be seen that upon the inward stroke of the needle the rack-bar 64 is given an upward movement, which bar, through the medium of the several pinions 66, 67, and 68 gives the loop-taker shaft 69 a slight rocking motion, so as to vibrate the loop-taker and raise its point to a plane above the needle. Upon the downward stroke of the rack-bar 64, and during the receding stroke of the needle, the loop-taker will rock inwardly to take the thread from the needle, and upon the succeeding upper stroke of the rack-bar the loop-taker will rock outwardly or in a reverse direction into its position above the path of the needle, ready to rock inward to shed its first loop and take another loop from the needle, as will be hereinafter more clearly pointed out.

In order to enable the machine to sew a sweat-band and reed-cloth together by stitches placed close together and connect said sweat-band and reed-cloth to a hat by stitches at comparatively great distances apart in one continuous operation, I have provided, in conjunction with the vertically-slidable frame 51, certain mechanism for raising and lowering the same, which is illustrated in Figs. 1, 2, 3, 10, 11, 12, 13, 14, and 15 of the drawings, and will now be described.

71 indicates a frame, preferably of rectangular form, which is pivotally connected by pins 72 between short standards 73 rising from the upper end of the slidable frame 51, and is provided on the upper side of its lower bar 74 with a raised portion 75, and 76 indicates a rotary shaft which is journaled adjacent to its rear end in a bearing 77 pivotally connected to a post 78 rising from the overhanging fixed arm 6, and is journaled adjacent to its forward end in a sleeve 79 which is arranged in a vertically-movable upright 80,

presently described, and has its outer side rounded, as shown, so as to enable it to rock in the upright 80 for a purpose presently set forth. At its forward end the shaft 76 is provided with a cam 81, which has a flattened portion 82 and is designed to engage the frame 71 and raise the same and the frame 51, and in rear of said cam 81, and preferably formed integral therewith is a cam 83, which is preferably of the shape shown and is designed when the shaft 76 is rotated to engage the portion 75 of the frame 71 and lower said frame, together with the frame 51. The said cams or portions 81 83 of a single cam are so arranged with respect to each other (see Figs. 13 14) that when the cam 83 is in a position to lower the frames 71 and 51 the flat side 82 of the cam 81 will be uppermost, so as not to interfere with the lowering of the frames, and when the rounded portion of the cam 81 is in engagement with the upper bar of the frame 71 the cam 83 will be out of engagement with the raised portion 75 of the lower bar of the frame 71, so as not to interfere with the upward movement of said frame and the frame 51.

At a suitable point in its length, preferably at a point immediately in advance of the bearing 77, the shaft 76 is provided with a ratchet or toothed wheel 84, which may be fixed on the shaft in any suitable manner, and may have any number of teeth suitable to the purpose of my invention. Said wheel 84, and consequently the shaft 76, are held against retrograde or backward movement by the pawl 85, and said shaft is rotated from the shaft 14 through the medium of the eccentric 15 thereon, the bar 86, which has a strap 87, engaging the eccentric 15, the crank-shaft 87^a, which is journaled in the upright standard of the overhanging fixed arm and is provided at its inner end with the slotted arm 88, connected by a bolt 89 (see Fig. 24) with the bar 86, and at its outer end with an arm 90, the arm 91, pivotally mounted on the shaft 76 and carrying the detent 92, engaging the teeth of the wheel 84, and the pitman 93, connecting the arm 90 and the arm 91, as shown. By this construction it will be seen that when the machine is in operation the wheel 84 and the shaft 76 will be turned the extent of a certain number of teeth every time the shafts 7 and 14 turn, and consequently the shaft 76 will be caused to rotate but once while the shafts 7 and 14 are rotating several times. By virtue of this it will be observed that the needle-arm 54, which gains its motion from the shaft 7, will rock or oscillate a number of times to make a number of stitches through a sweat-band and reed-cloth, while the frame 51 is in its uppermost position, and when the frame 51 is depressed or lowered by the action of the cam 83, and the flat side of the cam 81 is uppermost, as shown in Fig. 13, the needle-arm will rock or oscillate once and will take a single stitch through the sweat-band, reed-cloth, and hat so as to connect the connected sweat-band and reed-cloth to the hat, after which

the stitch-forming mechanism will be raised by the rounded portion of the cam 81 engaging the upper bar of the frame 71.

As will be readily observed by reference to Fig. 13, the curved portion of the cam 81 is much longer than the flattened portion 82 of the same. To this is due the fact that the frame 51 is held in its uppermost position sufficiently long to enable the stitch-forming mechanism to form several stitches through the sweat-band and reed-cloth, and is held in its lowermost position only long enough to enable said stitch-forming mechanism to form a single stitch through the sweat-band, reed-cloth and hat, it being readily observable that the first portion of the movement of the cam 81 from the position shown in Fig. 13 will carry the rounded portion of said cam into engagement with the upper bar of the frame 74 and will immediately raise said frame, the frame 51, and the stitch-forming mechanism carried thereby. The several parts just described are so timed that the frame 51 and the stitch-forming mechanism carried thereby will be depressed or lowered and also raised while the needle is out of or away from the materials.

The intervals between the depressions of the frame 51 and the stitch-forming mechanism, and consequently the intervals between the stitches which take through and connect the sweat-band, reed-cloth, and hat, may be readily lengthened or shortened when desired by connecting the bar 86 to the slotted arm 88 of the crank-shaft 87^a at various distances from said shaft 87^a, it being simply necessary when it is desired to lengthen the intervals to connect the bar 86 to the arm 88 at a greater distance from the shaft 87^a, so that each stroke of the pitman 93 will turn the wheel 84 the extent of but a few teeth, and the shafts 7 and 14 will be enabled to make a greater number of turns while the wheel 84 and shaft 76 are making but a single turn, and when it is desired to shorten the intervals it is but necessary to connect the bar 86 to the arm 88 at a point nearer to the shaft 87^a, so that each stroke of the pitman 93 will turn the wheel 84 the extent of a greater number of teeth and the shafts 7 and 14 will be enabled to make but a few turns while the wheel 84 and shaft 76 are making one.

95 (see Figs. 1, 2, and 25) indicates a block mounted and adapted to rock on the shaft 53.

96 indicates a longitudinally-slotted clamping-arm which is connected to the block 95 by screws taking through its slot, and is adapted to slide on said block, as presently described.

97 indicates a bowed spring which is connected to the face of the frame 51 and bears at its outer end against a flange on the upper side of the block 95, so as to press the lower end of the arm 96 in toward the front of the base 1, and 98 indicates the presser-foot which is suitably connected in a pivoted manner to the lower end of the clamping-arm 96 and is designed to press the materials

against the feed-bar 18. This presser-foot 98 is provided with a notch 99 for the passage of the needle, and with suitable guides 100 and 101 for the reception of a sweat-band and reed-cloth, and it is also provided with a lip or flange 102, (better illustrated in Figs. 1 and 2,) which is designed to rest above the hat-brim when the same is placed upon the raised portion 2 of the base 1 and hold the hat in position and prevent it from being raised by the feed-bar 18 during the upward and outward movement of the same before described.

At its upper end the clamping-arm 96 is provided with a suitable bearing 103, and in this bearing is arranged the lateral pin 104 at the forward end of the pitman 105, which pitman is slotted, as indicated by 106, to receive a guide-pin 107 on the side of the overhanging fixed arm 6, so as to enable it to serve also as a lever, and has its rear end connected to the arm 108 of the transverse crank-shaft 109. This shaft 109 is journaled in the overhanging arm 6, as better shown in Fig. 23, and it is provided at its end opposite to that which has the arm 108 with an arm 110, which is provided with an antifriction-roller, and is designed to be engaged and moved in opposite directions to move the clamping-arm 96 by the rotary cam 111. (Better illustrated in Figs. 1, 5, 23, and 27 of the drawings.) The said cam 111 is connected to the overhanging arm 6 by a screw 115, on which it is designed to turn, and it has a suitable handle 114 and is provided in its inner side with an approximately V-shaped recess 112, the wall 113 of which is designed to engage the antifriction-roller on the arm 110 of the shaft 109 to move the presser-foot 98 away from the front of the base 1 and feed-bar 18, and is also provided with a shoe 116 at the lower side of the recess 112, which shoe is designed and adapted to engage the arm 110 when the cam is moved in the direction indicated by arrow *a*, (see Fig. 5,) so as to move the lower end of the clamping-arm 96 and the presser-foot 98 toward the front of the base 1, so as to enable the spring 97 to perform its function of pressing the presser-foot against the materials.

The trunnion 118 on the inner side of the cam 111, which bears in a recess in the side of the arm 6 or in a suitable wear-plate connected to said arm, has a portion cut away, as indicated by 119, so as to allow play-space for the arm 110 of shaft 109.

It will be observed from the foregoing that when the cam 111 is turned in the direction opposite to that indicated by arrow in Fig. 5 the clamping-arm 96 will first be raised on its bearing-block 95 and will then be rocked so as to carry its lower end and the presser-foot 98 away from the base 1 and feed-bar 18 to permit of a ready interposition of materials between the same, and when the said cam 111 is turned in the direction indicated by arrow *a* in said Fig. 5 the clamping-arm 96 will first be lowered on its bearing-block 95 and will

then be rocked so as to move its lower end and the presser-foot 98 toward the base 1 and feed-bar 18 and enable the spring 97 to press the presser-foot against the materials, so as to clamp the same in position against said feed-bar 18.

When the clamping-bar is raised and rocked to the position shown by dotted lines in Fig. 25, the connection between the pitman 105 and the arm 108, the guide 107, and the connection between the pitman 105 and the bar 96 will be brought into a line and a dead-center will be formed which will hold the bar 96 and presser-foot 98 in the position shown by dotted lines until the cam 111 is turned in the direction indicated by arrow *a* in Fig. 5. This is an important advantage, as it enables the operator to use both hands in placing the sweat-band and the reed-cloth in the guides 100 and 101, respectively, of the presser-foot.

125 indicates a vertically-disposed wheel which is fixed on the forward end of the shaft 7, within the overhanging arm 6, and is provided in its forward side with a cam-groove 126.

127 indicates a vertical slide-block which is arranged on a fixed guide-rod 128 (see Fig. 18) and is provided with an antifriction-roller 129 or other device for engaging the cam-groove of the wheel 125. (See Fig. 11.)

130 indicates a vertical plunger-rod which is connected and adapted to move with the slide 127 and extends through and below the overhanging arm 6 and is provided adjacent to its lower end with a notch 131. (See Fig. 7.)

132 indicates a casting which has a vertical bore 133 to receive the rod 130, and also has a recess 134 to receive the spring-pressed latch 135, which is designed to normally engage the notch 131 of the rod 130 and fix the casting 132 with respect thereto.

115^a indicates a needle-plate at the lower end of the frame 51.

136 (see Fig. 29) indicates a looper which has a finger 137 to engage the thread and is provided with an opening 138 of approximate obtuse-angle form to receive the guide-pin 139, by which it is connected to the needle-plate 115^a, and by reason of which and the opening 138 its lower end is moved inwardly toward the path of the needle when it is moved downwardly, and is moved outwardly or away from the path of the needle when it is drawn upwardly, as will be hereinafter more fully described.

140 (see Fig. 3) indicates an arm which is pivotally connected at its outer end to an arm 141, fixedly connected to the frame 51, and at its inner end to the looper 136.

142 (see Fig. 1) indicates a lever which is fulcrumed at an intermediate point of its length on the side of the frame 51, and is loosely connected at its rear end to the casting 132 on the plunger-rod 130, and 143 indicates a link which connects the forward end of the lever 142 and the arm 140.

By reason of the construction just described

it will be observed that as the shaft 7 and cam 125 rotate, the plunger-rod 130 and casting 132 will be reciprocated, the lever 142 and arm 140 will be rocked, and the looper 136 moved downwardly and inwardly toward the path of the needle and away from the path of the needle and upwardly, the first or downward and inward movement being to enable the looper to take a loop from the thread, and the second or outward and upward movement being designed to enable the looper to shed its loop, all as will be more fully hereinafter described.

It is necessary when it is desired to interpose a hat-brim between the needle-plate 115^a at the lower end of the frame 51 and the raised portion 2 of the base 1 to raise the frame 51 and its needle-plate a considerable distance above the base portion 2, and in order that this may be done by hand at the same time that the clamping-bar 96 and the presser-foot 98 are moved away from the base and feed-bar 18, I provide the slidable plate 116^a, which is arranged on and suitably connected to an arm 117^a, connected to and extending laterally from the frame 51, and has its forward end backed by a spring 118^a and its rear end beveled as shown, for a purpose presently described, and also provide the cam 111 with a shoulder 119^a designed to engage the plate 116^a, whereby it will be seen that when said cam 111 is turned in the direction of the arrow in Fig. 1, and the cam-shoulder 119^a engages the plate 116^a, the frame 51 and all of its appurtenances will be raised for the purpose mentioned.

For the purpose of holding the shaft 76 (see Figs. 1, 6, 10, and 11) steady during the operation of the stitch-forming mechanism, and also to prevent casual raising of said shaft with the frame 51, I provide the depending portion 150^a of the vertically-movable bearing 80 with a notch 151^a, and also provide the horizontally-disposed spring-pressed latch 152, which is connected with the overhanging fixed arm 6, and is designed to normally hold the bearing 80 and shaft 76 in the position shown in Fig. 11. It is necessary before the bearing 80, shaft 76, and frame 51 can be raised to permit of the interposition of a hat-brim between the latter and the raised portion 2 of the base 1 to disengage the latch 152 from the notch 151^a in said bearing 80. To enable the operator to do this through the medium of the hand-lever 114 before the shoulder 119 of the cam 111 engages the plate 116 of the frame 51, I provide the said cam 111 with a shoulder 155, arranged in advance of the shoulder 119^a, and also provide the slide 156, (better shown in Fig. 1,) which slide is connected to the side of the overhanging arm 6, is adapted to engage the latch 152 and is provided with a device 157 (preferably an antifriction-roller) designed to be engaged by the cam-shoulder 155. Thus when the cam 111 is turned the shoulder 155 thereof will engage the slide 156 and through the medium

of the same will disengage the latch 152 from the vertically-movable bearing 80 before the cam-shoulder 119^a reaches the plate 116^a on frame 51. It is also necessary before the bearing 80 and frame 51 is raised to disengage the latch 135 from the notch 131 of the rod 130, so as to enable the coiled spring 160, which is interposed between the lower side of the arm 6 and the casting 132, to move said casting 132 downwardly and thereby, through the medium of the mechanism described, raise the looper 136 above the lower edge of the needle-plate 115, so as to prevent said looper from catching into the hat and interfering with the interposition of the same between the needle-plate and the raised portion 2 of the base 1. To effect such disengagement of the catch 135 from the notch 131 of the rod 130, I provide the slide 165, which is connected to a plate 166, fixed on the side of the arm 6, and is adapted to engage the latch 135, and I also provide the cam 111 with a shoulder 167 to engage the antifriction-roller 168 on the slide 165, as shown, whereby it will be seen that when the cam 111 is rotated the latch 135 will be disengaged from the rod 130 simultaneously with the disengagement of the latch 152 from the vertically-movable bearing 80.

When it is desired for convenience sake to have the belt-pulley at the side instead of at the end of the machine, such pulley may be fixed on the auxiliary shaft 170, as shown by dotted lines in Fig. 22, and the shaft 7, which is connected by gearing with the shaft 170, as shown, rotated in that manner.

In the practical operation of the machine the holder 3 is adjusted to hold the crown of the hat to be sewed at the desired angle, and after the clamping-bar 96 and the presser-foot 98 have been moved away from the front of the base 1 and the frame 51 has been raised through the medium of the handle 114, as before described, the hat-crown is laid against the holder or plate 3 and its brim is placed over the raised portion 2 of the base 1, after which the cam 111 is turned, through the medium of the handle 114, sufficiently to enable the frame 51 to drop and clamp the hat-brim between its needle-bar 115 and the portion 2 of the base 1. Before the cam 111 is turned sufficiently to move the clamping-bar 96 and presser-foot 98 in toward the base and feed-bar 18, the hat-sweat and reed-cloth are placed in position in the guides 100 and 101, respectively, of the presser-foot, after which the cam 111 is moved so as to move said clamping-bar and presser-foot and enable the spring 97 to press and hold the presser-foot 98 and the sweat-band and reed-cloth carried thereby against the hat.

The machine is now ready for operation, and when the main shaft 7 is rotated it will be seen that the needle, properly threaded, will take a plurality of stitches through the sweat-band and reed-cloth, and then when the frame 51 and its appurtenances are lowered or de-

pressed, as described, will take a stitch through not only the sweat-band and reed-cloth but also through the hat to connect the sweat-band and reed-cloth to said hat. After the single stitch through the sweat-band, reed-cloth and hat, the frame 51 is raised in the manner before described and a plurality of stitches taken through the sweat-band and reed-cloth, after which the frame is again depressed and a stitch taken through the sweat-band, reed-cloth and hat, and so on until the sweat-band and reed-cloth are connected together throughout their length and at intervals in their length to the hat. In this way, in one continuous operation with a single thread, the sweat-band and reed-cloth are connected together by stitches arranged close together and are connected to the hat by stitches arranged a comparatively great distance apart, which is highly desirable, inasmuch as stitches arranged close together, such as are the stitches which connect the sweat-band and reed-cloth, would tend to materially weaken the connection of the hat-brim to the crown.

When the connection of the sweat-band and reed-cloth together and to the hat is completed, the hat may be readily removed by raising the frame 51 in the manner described.

The movements of the needle-arm 54, looper 136, and loop-taker 70 are preferably so timed that when the needles move inwardly the loop-taker will take two loops therefrom, and upon the succeeding outward stroke of the needles the looper will engage the thread of one needle so as to form a bight, and will hold such bight in the path of the other needle so as to enable it to pass through the bight.

Having described my invention, what I claim is—

1. A sewing-machine comprising in combination, an organized stitch-forming mechanism, a movable frame carrying such mechanism, and mechanism capable of moving said frame in opposite directions and retaining it in one position for a certain length of time and in another position for a greater length of time so as to enable the stitch-forming mechanism to form a greater number of stitches while the frame is in one position than while said frame is in the other position, substantially as and for the purpose set forth.

2. A sewing-machine comprising in combination an organized stitch-forming mechanism, a movable frame carrying such mechanism, and a rotary cam capable of moving said frame in opposite directions and retaining it in one position for a certain length of time to enable the stitch-forming mechanism to form one or more stitches, and in another position for a greater length of time so as to enable the stitch-forming mechanism to form a greater number of stitches, substantially as specified.

3. A sewing-machine comprising an organized stitch-forming mechanism, a vertical rectilinearly-slidable frame carrying the same and having an open frame at its upper end,

and a rotary cam arranged in said open frame and having a portion capable of moving the movable frame downwardly and retaining it in one position for a sufficient length of time to enable the stitch-forming mechanism to form one or more stitches and also having a portion capable of raising the movable frame and retaining it in its raised position for a greater length of time so as to enable the stitch-forming mechanism to form a greater number of stitches than when the frame is in its lower position, substantially as specified.

4. In a sewing-machine, the combination of a base, a suitable support, a clamping-bar normally pressed by a spring toward the base, a shaft journaled in the support and having a crank at one end connected with the clamping-bar and also having a crank at its opposite end, and a disk having a handle and also having a shoulder adapted to engage the latter crank of the shaft, substantially as specified.

5. In a sewing-machine, the combination of a base, a suitable support, a rocking piece carried by the support, a clamping-bar connected to the rocking piece and movable lengthwise thereon, a spring for normally pressing the lower end of the clamping-bar toward the base, a shaft journaled in the support and having a crank at one of its ends, a pitman connecting said crank and the upper end of the clamping-bar and a suitable means for rotating the shaft, substantially as specified.

6. In a sewing-machine, the combination of a base, a suitable support, a rocking piece carried by the support, a clamping-bar connected to the rocking piece and movable lengthwise thereon, a spring for normally pressing the lower end of the clamping-bar toward the base, a shaft journaled in the support and having a crank at one of its ends, a combined pitman and lever connecting said crank and the upper end of the clamping-bar and a suitable means for rotating the shaft; the parts being so arranged that when the shaft is rotated to raise the clamping-bar and move its lower end away from the base, the shaft, the connection between the crank and the pitman and the connection between the pitman and clamping-bar will rest in a line and form a dead-center, substantially as specified.

7. A sewing-machine comprising a suitable support, an organized stitch-forming mechanism, a movable frame carrying such mechanism, a rotary cam for moving said frame, a shaft carrying the cam and journaled at its rear end in a pivotally-mounted bearing and adjacent to its forward end in a movable bearing, and a suitable means independent of the rotary cam for moving the movable frame, substantially as specified.

8. A sewing-machine comprising a suitable support, an organized stitch-forming mechanism, a movable frame carrying such mechanism, a rotary cam for moving said frame, a

shaft carrying said cam and journaled at its rear end in a bearing pivotally connected with the support and adjacent to its forward end in a vertically-movable bearing, a latch for normally holding the vertically-movable bearing against movement, and means for disengaging the latch from the movable bearing and raising the movable frame, substantially as specified.

9. A sewing-machine comprising a suitable support, an organized stitch-forming mechanism, a movable frame carrying such mechanism, a rotary cam for moving said frame, a rotary shaft carrying said cam and journaled at its rear end in a bearing pivotally connected with the support and adjacent to its forward end in a movable bearing, a latch for normally holding the vertically-movable bearing against movement, a spring-pressed material-clamping bar, and means for swinging the clamping-bar, disengaging the latch from the movable bearing and moving the movable frame, substantially as specified.

10. In a sewing-machine, the combination of a suitable support, a vertically-movable bearing arranged on the support, a latch adapted to normally hold the bearing against movement, a disk having a handle, a slide adapted to be engaged and moved by the disk and adapted to engage and move the latch, substantially as specified.

11. In a sewing-machine, the combination of a suitable support, a vertically-movable bearing arranged on the support, a latch adapted to normally hold the bearing against movement, a vertically-movable frame, a rotary disk arranged on the support and having a handle and adapted when partially rotated to raise the frame, and a slide adapted to be moved by the disk when the same is partially rotated and engage and move the latch so as to release the vertically-movable bearing, substantially as specified.

12. In a sewing-machine, the combination of a suitable support, a vertically-movable bearing arranged on the support, a latch adapted to normally hold the bearing against movement, a slide arranged on the support and adapted to engage the latch and having an antifriction-roller, and a rotary disk having a handle and also having a shoulder adapted to engage the antifriction-roller of the slide, substantially as specified.

13. In a sewing-machine, the combination of a suitable support, a vertically-movable frame, a bearing pivotally connected with the support, a vertically-movable bearing, a shaft journaled in said bearings and provided with means for raising and lowering the frame, and means independent of the rotary shaft for raising the frame, substantially as specified.

14. A sewing-machine comprising a suitable support, a vertically-movable frame, a bearing pivotally connected with the support, a vertically-movable bearing arranged on the support, a shaft journaled in said bearings and

equipped with means for moving the frame, a latch for normally holding the vertically-movable bearing against movement, a slide adapted to engage and move the latch, a spring-pressed material-clamping bar, a shaft journaled in the support and connected with said bar and having a crank-arm, and a rotary disk mounted on the support and having a shoulder adapted to engage and move said crank-arm, a shoulder adapted to engage the slide and thereby move the latch to release the movable bearing, and a shoulder adapted to engage and move the frame all in the order named, substantially as specified.

15 15. In a sewing-machine, the combination of an organized stitch-forming mechanism, a movable frame or support carrying such mechanism, a rotary shaft equipped with means for moving said frame, and mechanism for transmitting motion to said shaft; said mechanism being capable of adjustment to increase or diminish the speed of rotation of the said shaft, substantially as specified.

25 16. In a sewing-machine, the combination of a movable frame, a rotary shaft equipped with means for moving said frame and having a toothed wheel, an arm having a detent adapted to engage the teeth of the wheel, a crank-shaft having arms at opposite ends, a pitman connecting one crank-arm and the arm carrying the detent, a shaft, a pitman adjustably connected to the other crank-arm and a suitable means for reciprocating said latter pitman, substantially as specified.

35 17. In a sewing-machine, the combination of a fixed incline as 24, a plate adapted to move on said incline, and having means for engaging a material or materials, a shaft having a cam, a lever having a frame receiving the cam and an arm or pitman connecting said lever and the plate, substantially as specified.

40 18. In a sewing-machine, the combination of a fixed incline as 24, a plate adapted to move on said incline and having means for engaging a material or materials, a shaft having a cam, a lever having a frame receiving the cam, an arm or pitman connecting said lever and the plate, a reciprocatory bar connected with the arm and disposed at an angle thereto, a lever connected with said bar, and

a suitable means for rocking the lever, substantially as specified.

19. In a sewing-machine, the combination of a frame, a looper having a slot of approximate obtuse-angle form and also having a thread-engaging hook, a rotary shaft provided with a disk having a cam-groove, a plunger connected with a device arranged in said groove, an arm pivoted at one end and having its opposite end connected to the looper, a lever fulcrumed at an intermediate point of its length and having one of its ends connected with the plunger, and a link connecting the opposite end of the lever and the arm, substantially as specified.

20. In a sewing-machine, the combination of a suitable support, a movable frame or plate, a looper connected with and movable on said frame or plate, a rotary shaft provided with a disk having a cam-groove, a plunger connected with a device arranged in said cam-groove, a casting arranged on the plunger, a spring-pressed latch carried by the casting and adapted to normally engage a notch in the plunger and fix the casting with respect thereto, mechanism intermediate of the casting and the looper for actuating the latter, a slide adapted to engage the spring-pressed latch and disengage the same from the plunger, and a rotary disk having a handle and adapted to engage and move the frame and also adapted to engage and move the slide, substantially as specified.

21. In a sewing-machine, the combination of a movable, spring-pressed material-clamping bar, a shaft connected by intermediate mechanism with said bar and having a crank-arm, and a rotary disk having a handle and also having two shoulders; one shoulder for engaging and moving the crank-arm when the disk is turned in one direction and the other shoulder for engaging and moving the crank-arm when the disk is moved in the opposite direction, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

WELCOME P. GAMMONS, JR.

Witnesses:

LOUIS LEWINSOHN,
BRUNO W. PORTZAH.