

No. 655,143.

Patented July 31, 1900.

R. G. WOODWARD.  
RUFFLING SEWING MACHINE.

(Application filed July 20, 1898.)

(No Model.)

5 Sheets—Sheet 1.

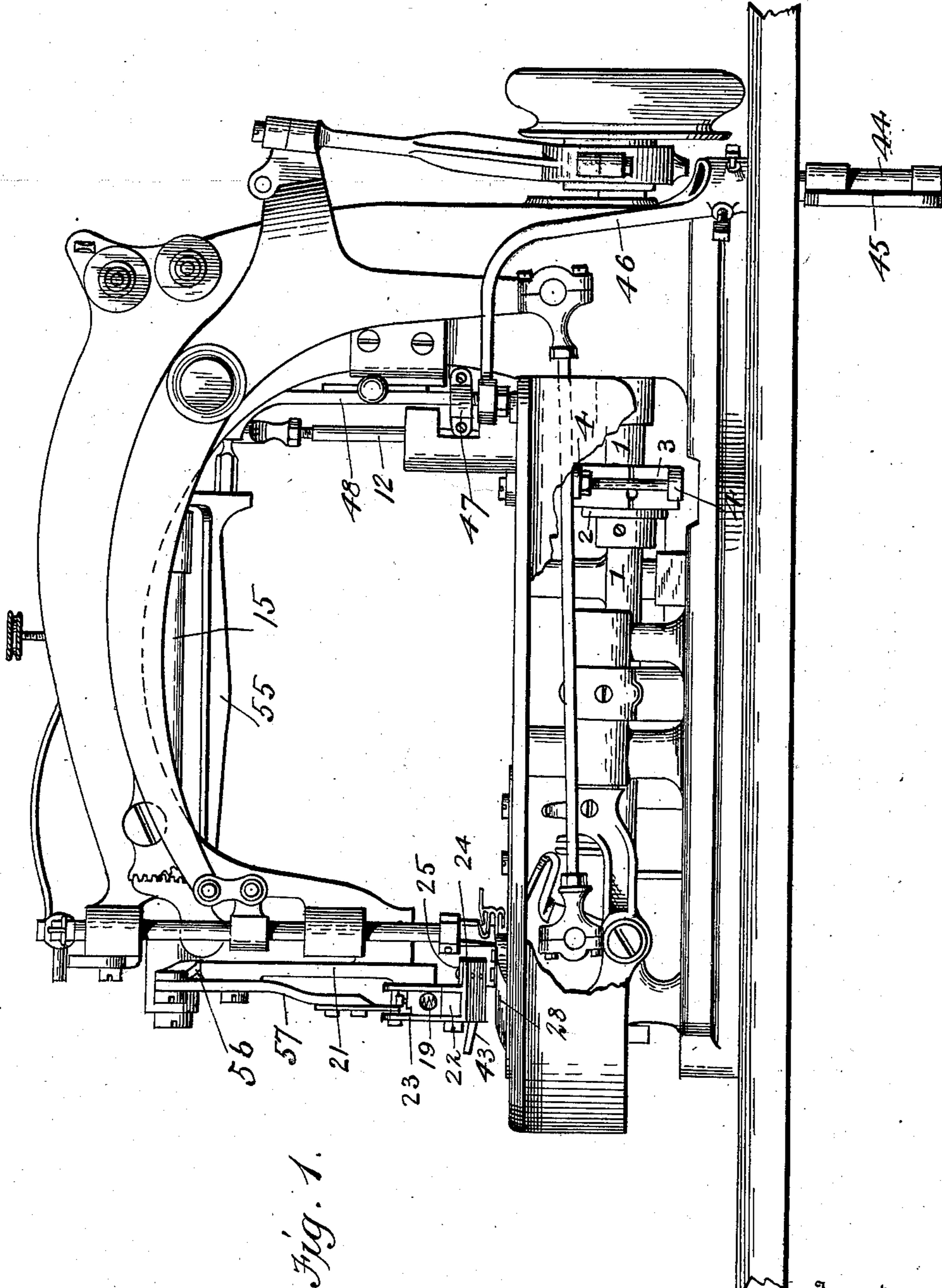


Fig. 1.

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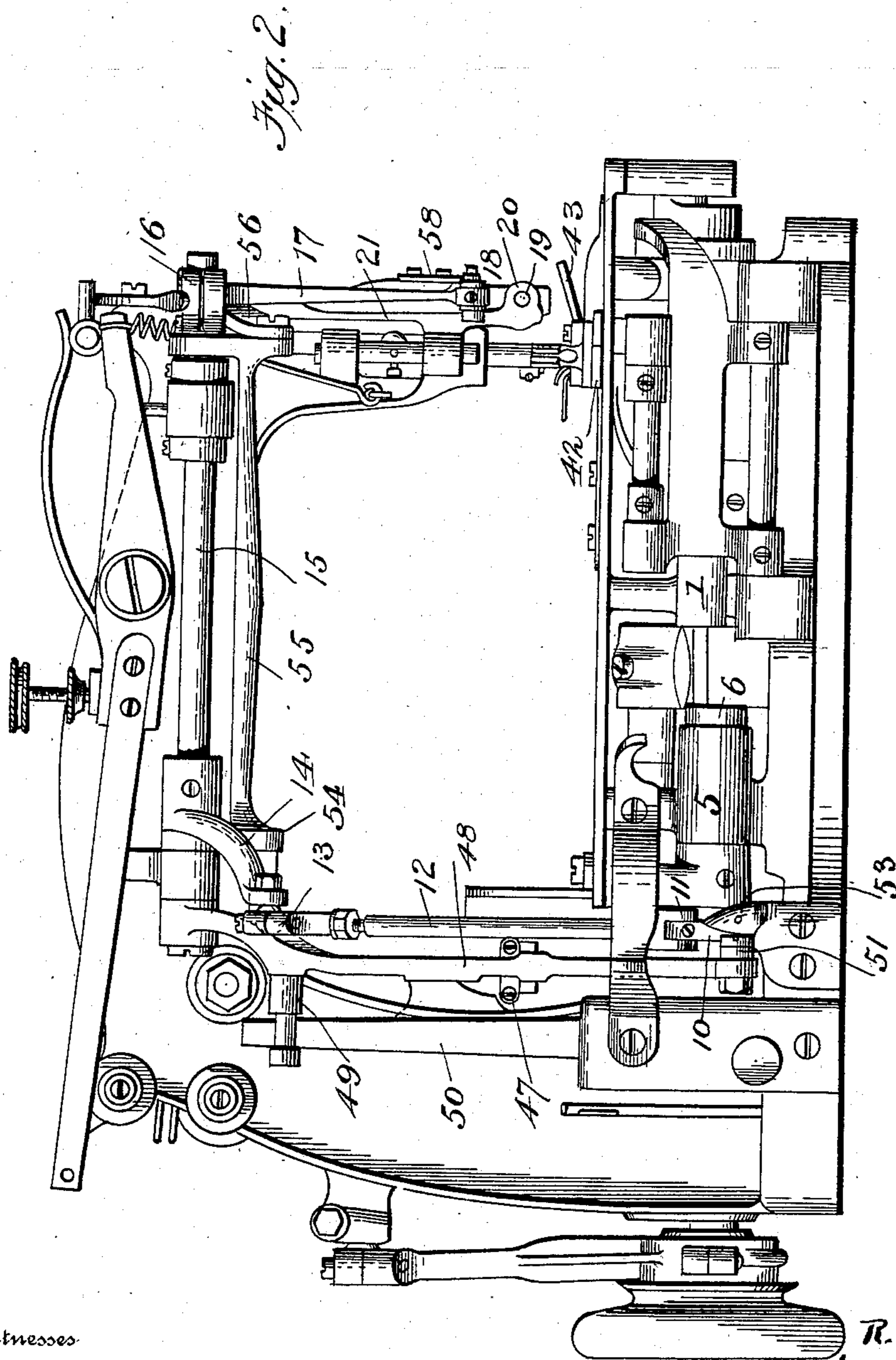
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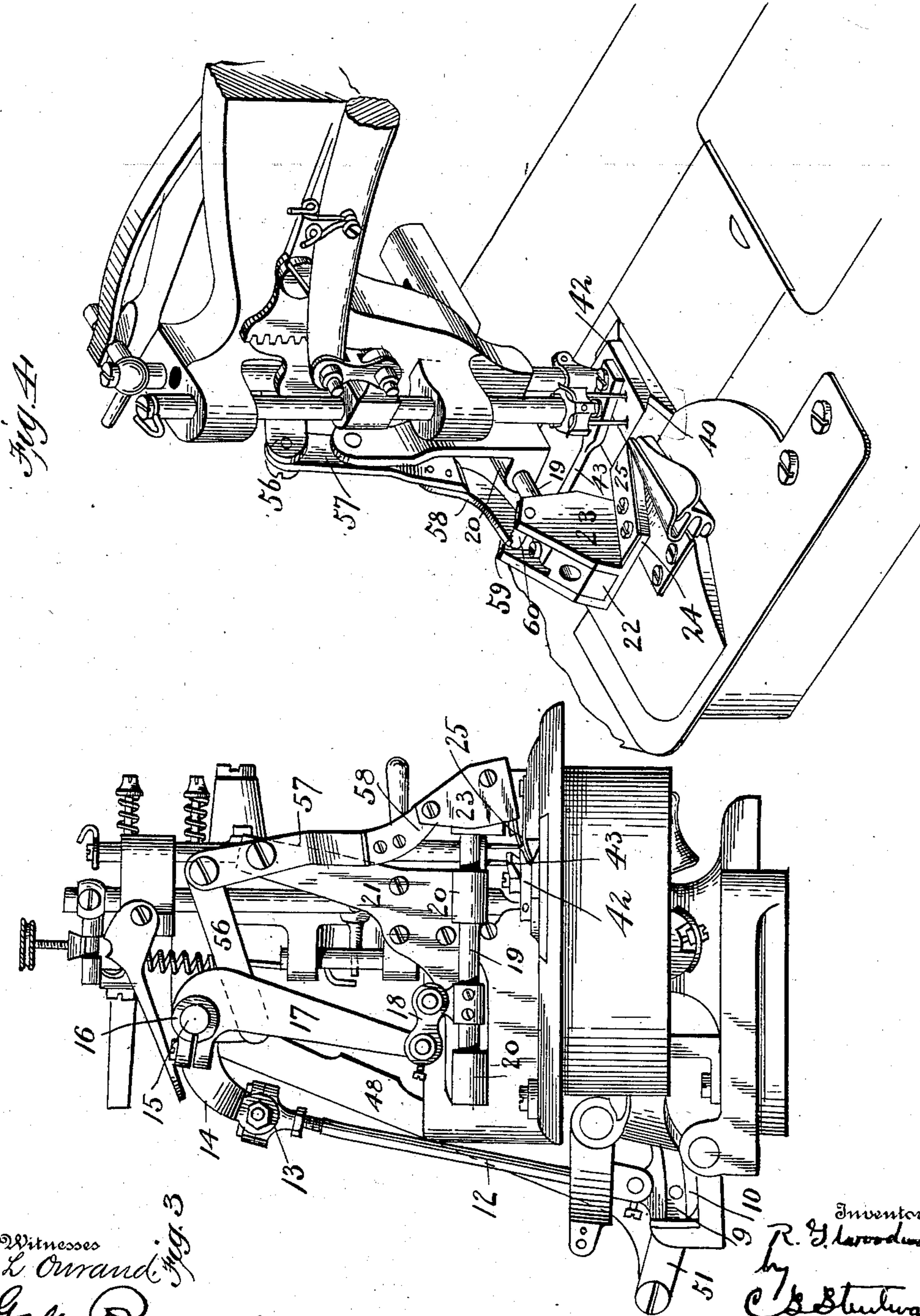
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Fig. 6.

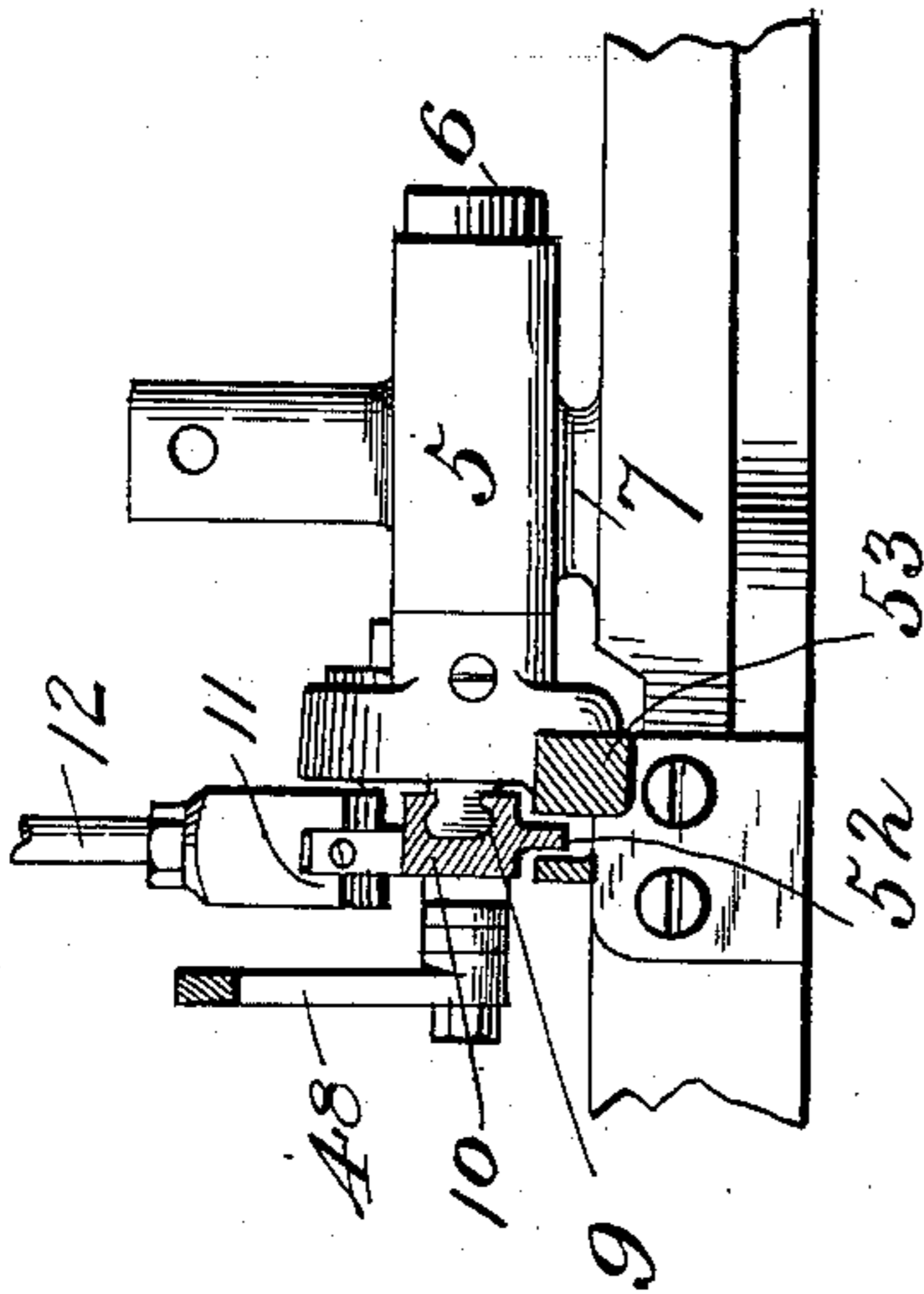


Fig. 7.

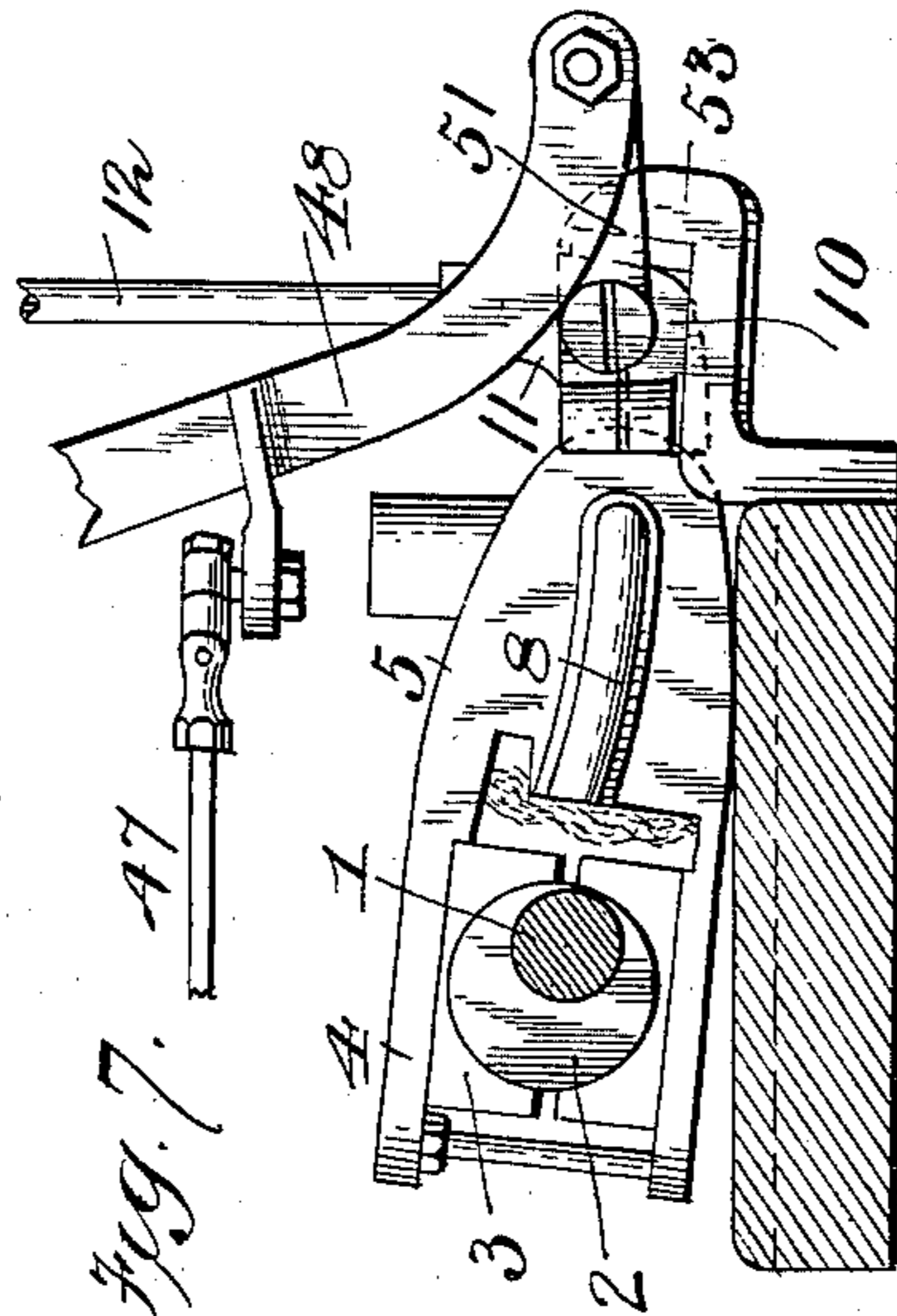
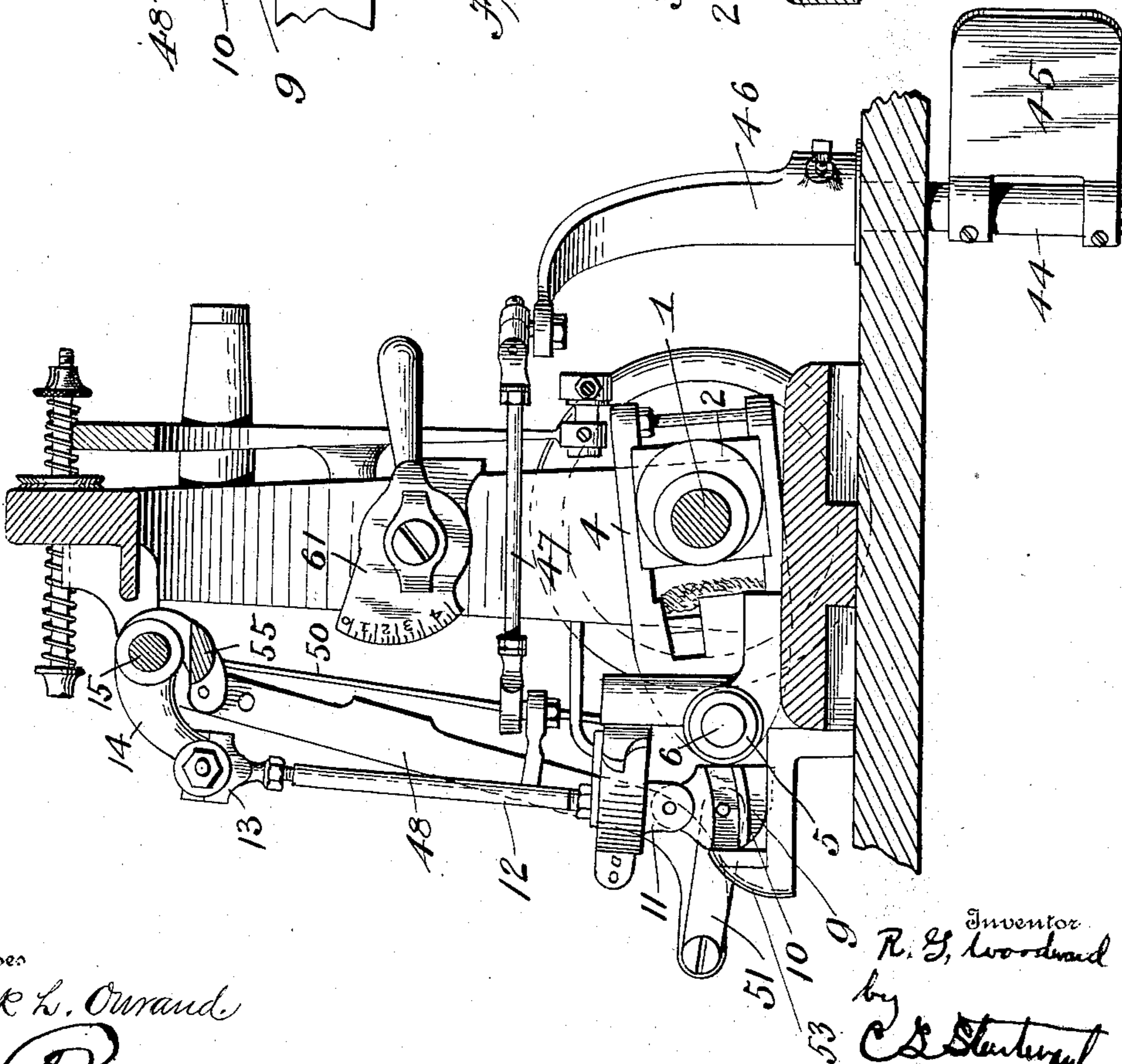


Fig. 5.



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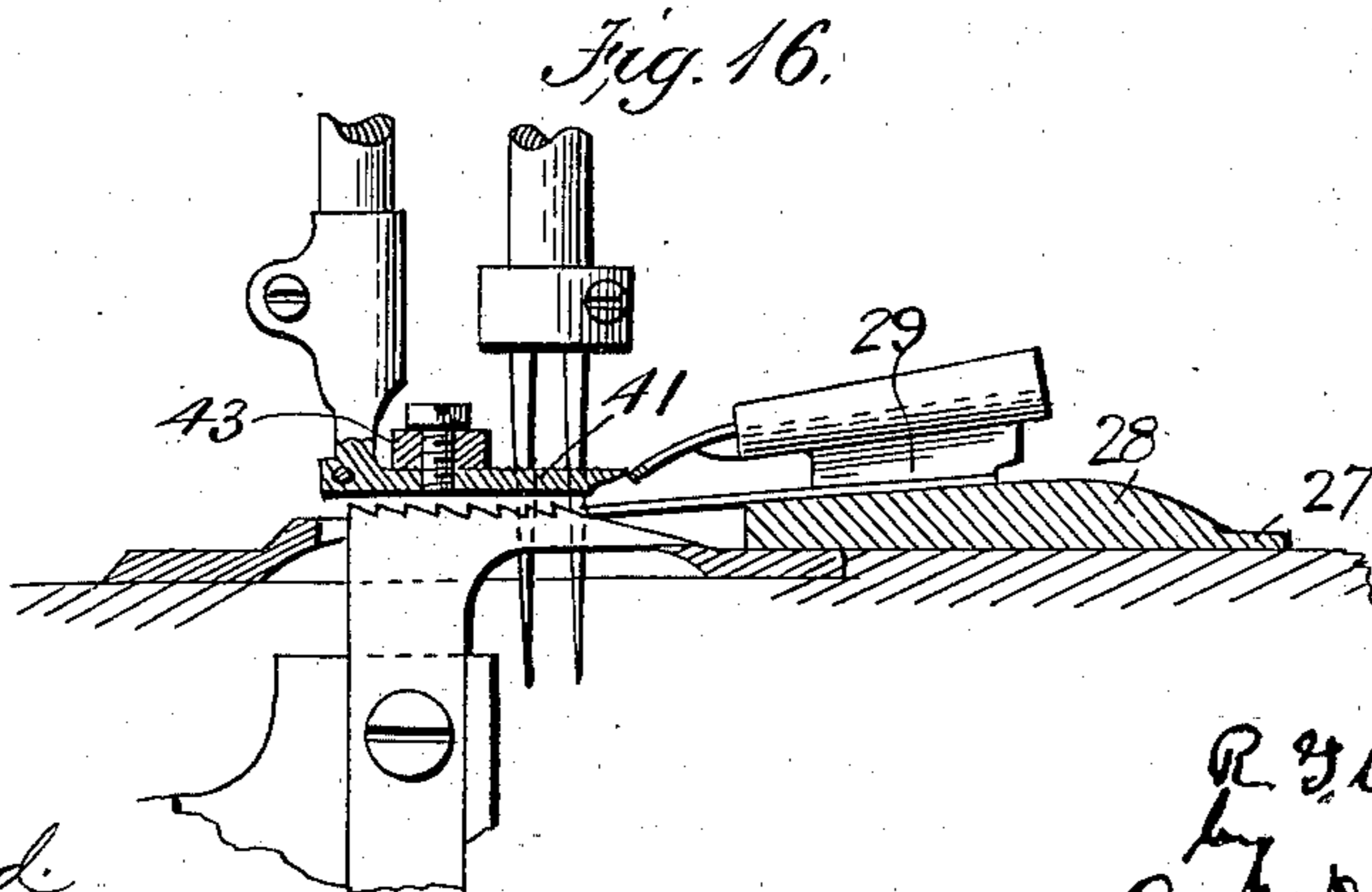
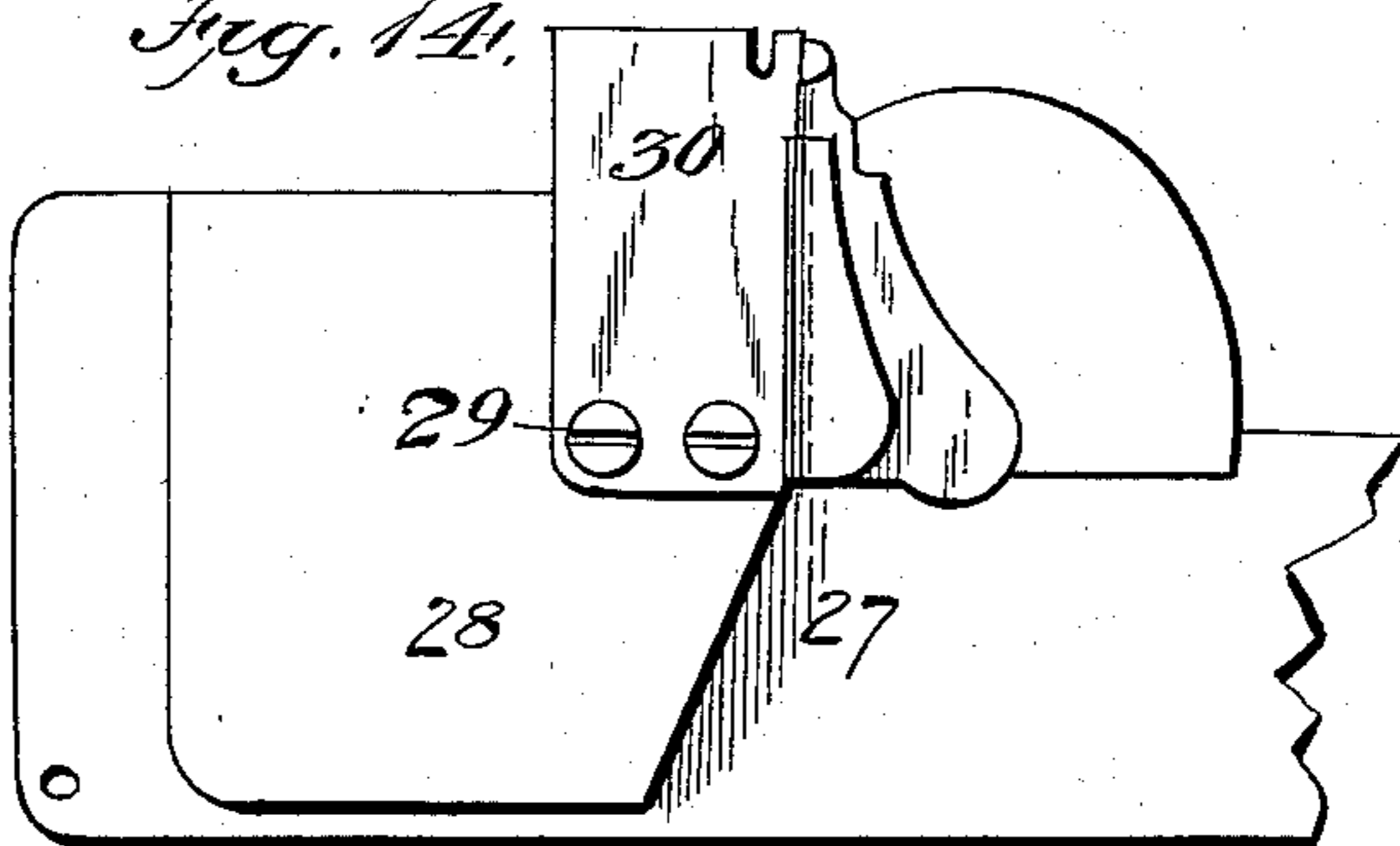
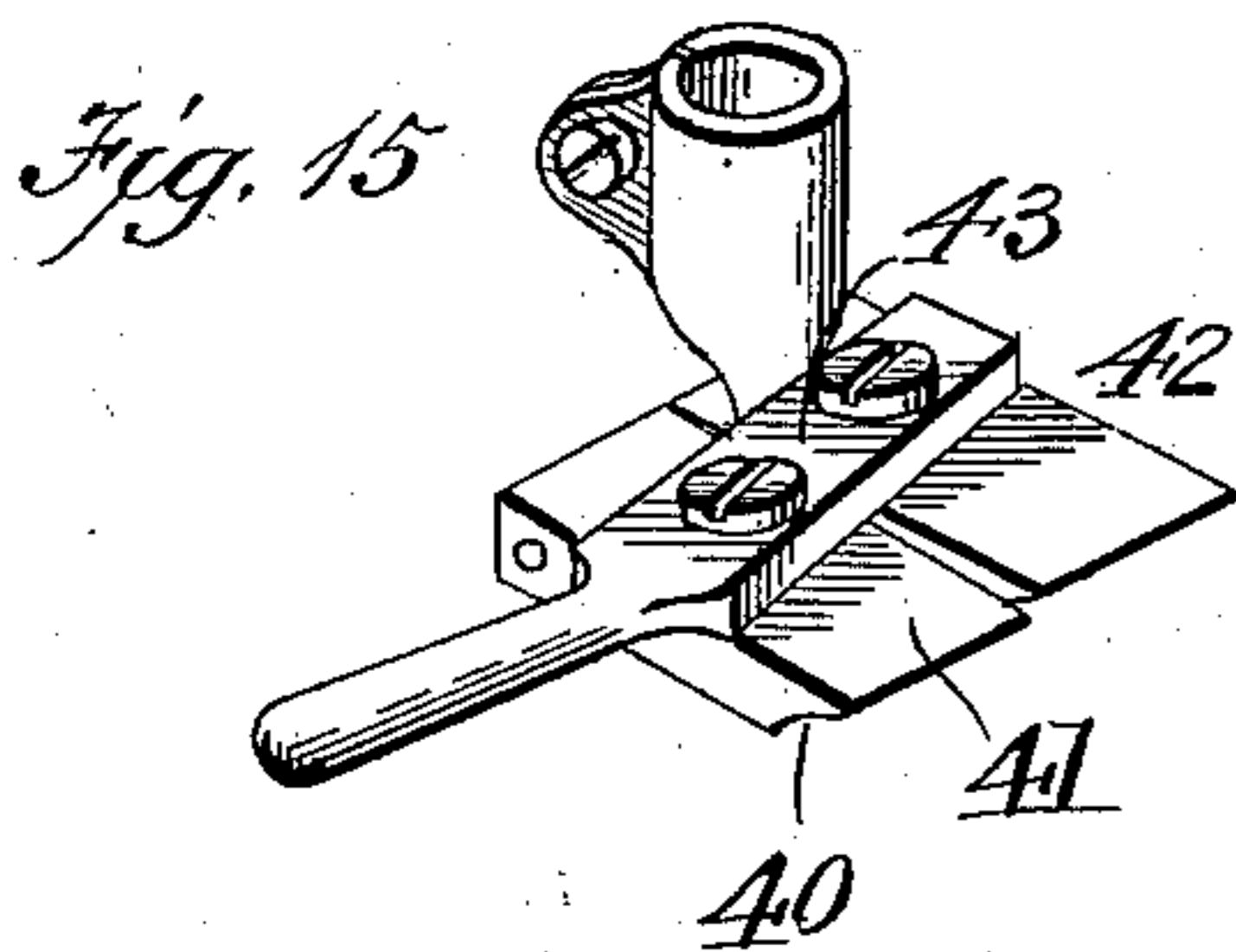
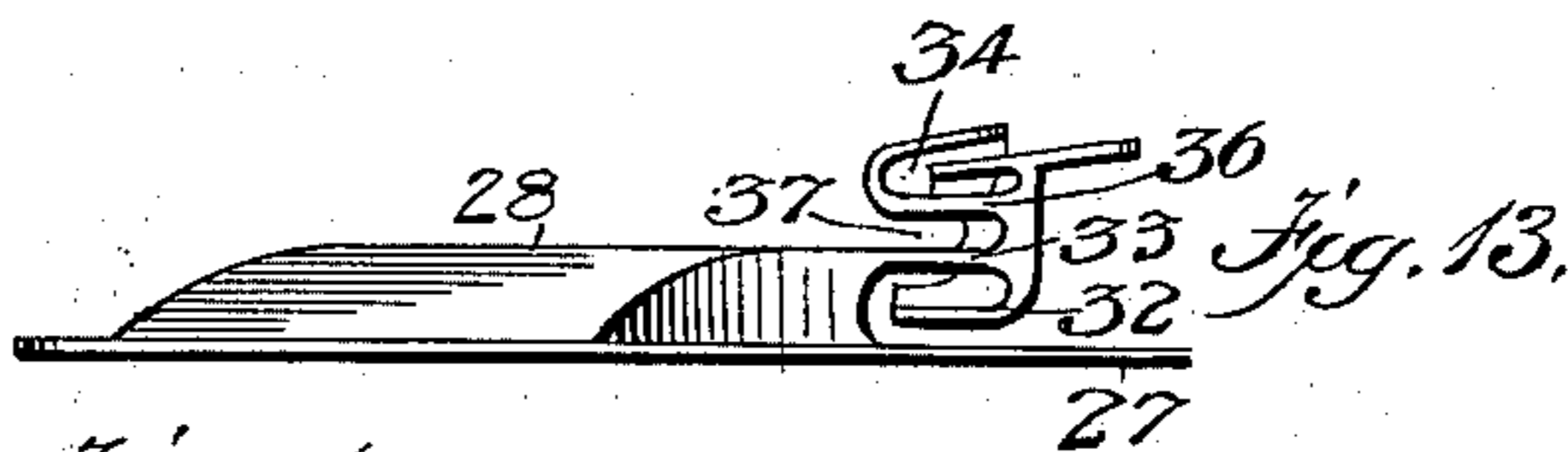
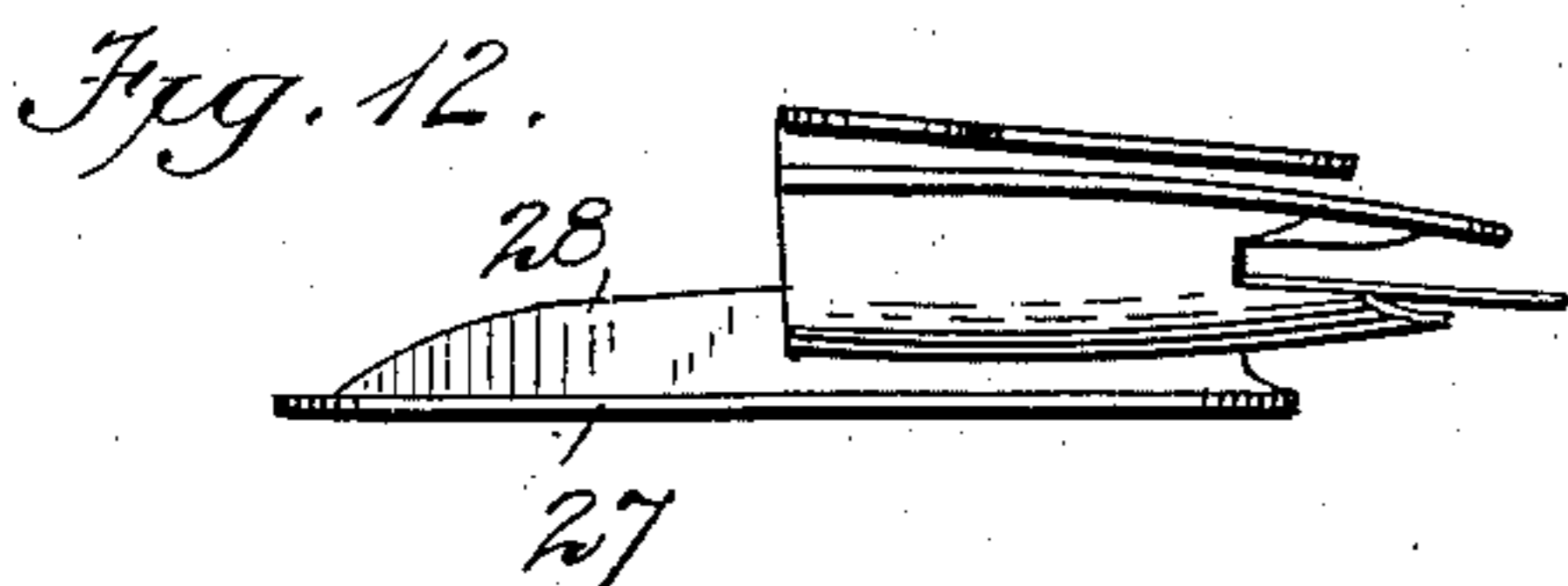
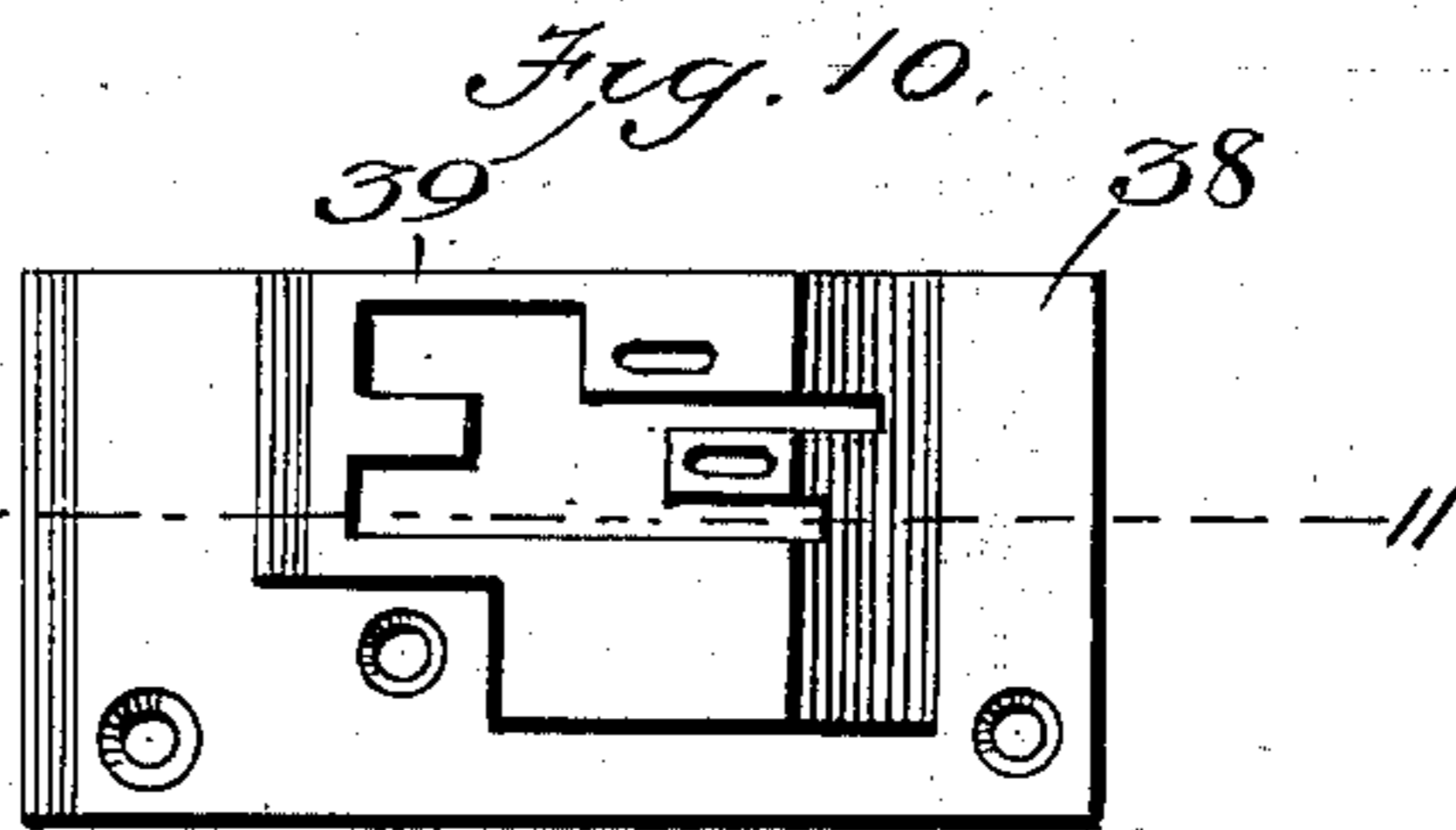
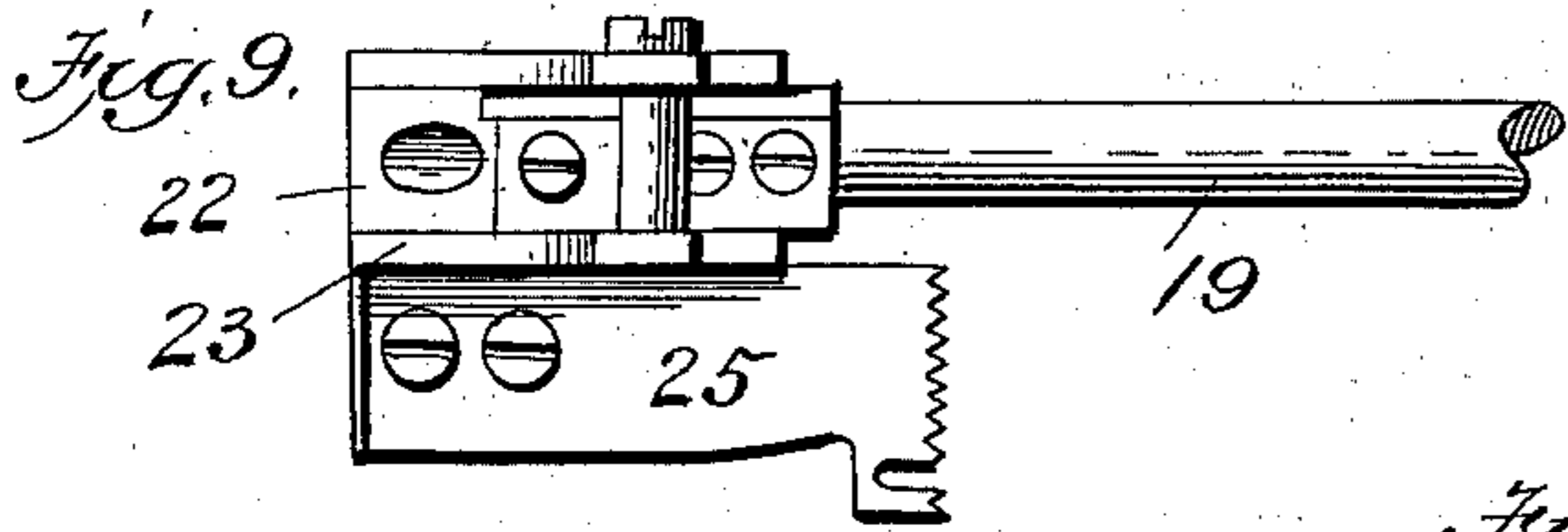
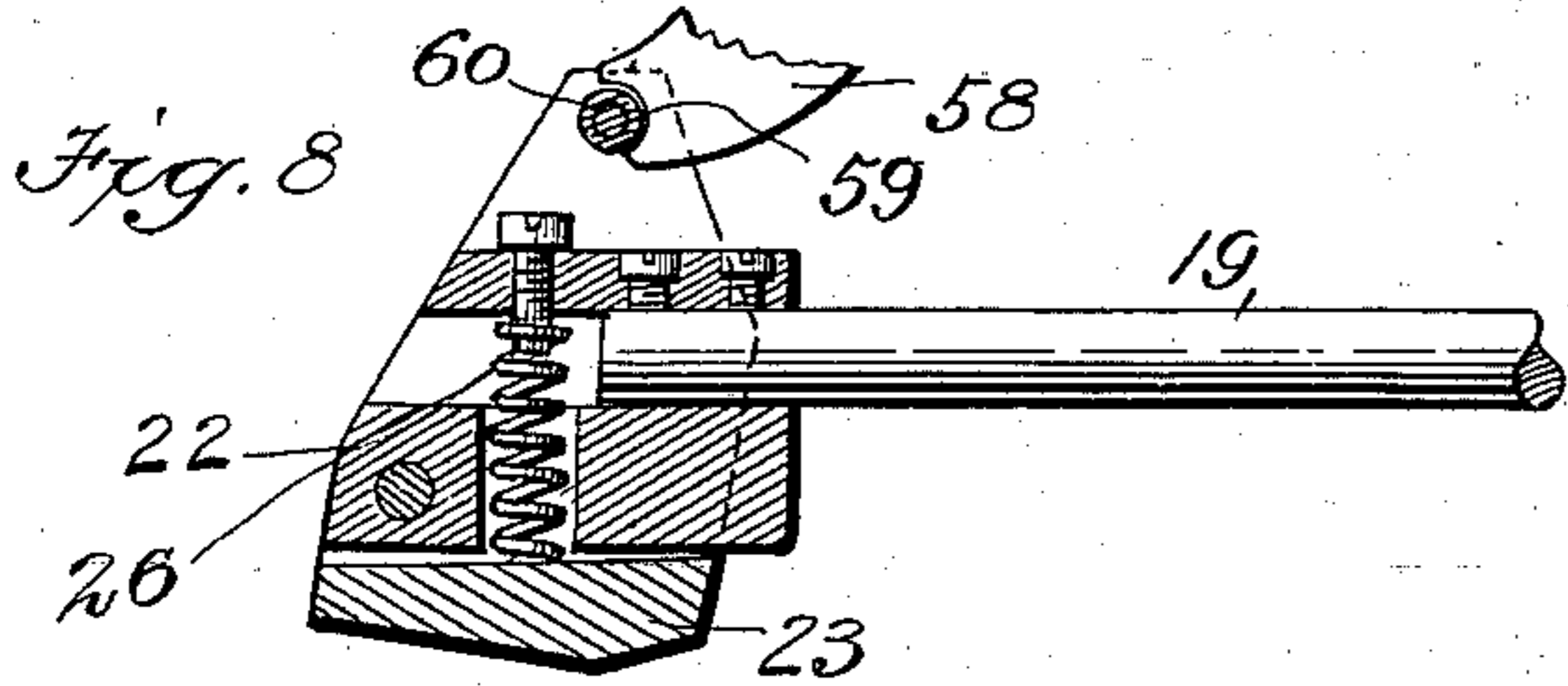
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# UNITED STATES PATENT OFFICE.

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## RUFFLING SEWING MACHINE.

SPECIFICATION forming part of Letters Patent No. 655,143, dated July 31, 1900.

Application filed July 20, 1898. Serial No. 686,444. (No model.)

*To all whom it may concern:*

Be it known that I, RUSSEL G. WOODWARD, a citizen of the United States, residing at Waukegan, in the county of Lake, State of Illinois, have invented certain new and useful Improvements in Ruffling and Sewing Machines, of which the following is a description, reference being had to the accompanying drawings, and to the figures of reference marked thereon.

The present invention relates to an improvement in sewing-machines, and has especial reference to a combined ruffling and sewing machine, the ruffling mechanism being applied to the sewing-machine and being so arranged that it may be thrown into and out of operation without stopping or retarding the action of the stitch-forming mechanism, even when running at very high speed.

The special work for which this machine has been devised is for gathering or ruffling the back of a shirt across the shoulders and at the same time or in a continuous operation properly turning the edges and securing thereto the pieces of the double yoke, although it will be understood that the invention is not limited in its application to this class of work alone.

In the manufacture of shirts as heretofore carried on the method of securing the yoke and the back together was for an operator to ruffle the back of the shirt on one machine, then another operator put on the yoke and stitched it down, and then the third operator stitched on the other half of the yoke, making two rows of stitching. In the present machine, as will be hereinafter described, by being enabled to throw the ruffler into and out of operation at will the ruffle may be put on at any desired point without interfering at all with the speed of the machine, and, as backs of shirts are made some with the ruffle in the center, some with the ruffle on both shoulders, and some with three or more different ruffles on the back of the garment, in the use of the present machine, where the ruffler may be thrown in and out at will and the work all done on one machine and by one operator, there is an immense saving to the manufacturer. So, also, the present invention has proved of great value in the making of shirt-

waist sleeves. As heretofore manufactured one operator makes the body of the garment, seaming up the "under-the-arm" seam, another operator ruffles the top of the sleeve, still another operator sets the sleeves in, and the last operator binds them. In the use of the present machine the stitching, ruffling, and taping are all done at one operation, the ruffler being thrown in and out at any point to put the fullness wherever required. Furthermore, experience has shown that where the ruffler is thrown in and out at will—as, for instance, on the yoke of the shirt—in addition to the saving of the cost of a number of operations to the manufacturer more uniform and better results can be secured, because the operator can always bring her work out even, thus preventing ripping out and sewing over or trimming of the work after it is completed, because this can be controlled during the operation of sewing while the machine is running at high speed.

The object of the invention therefore, broadly, is to provide a combined sewing and ruffling machine in which the ruffling device may be operated instantly at the full speed of the machine and thrown into and out of operation.

The invention therefore consists, primarily, of a sewing-machine having a ruffling device, with means for throwing the same into and out of action while the machine is in operation without interfering with the sewing mechanism.

Secondly, the invention consists in a sewing-machine having a ruffling device, with positive means for throwing the ruffling device into action and means for automatically throwing it out of action.

Thirdly, the invention consists of means whereby when the ruffling mechanism is moved out of action the blade is automatically elevated from the work.

Fourthly, it comprises means for automatically throwing the ruffler-blade down to its work before it commences the ruffling action.

Fifthly, it comprises means for positively tilting the ruffler-blade out of contact with the goods and automatically returning it when the ruffling action is about to begin.

Again, the invention comprises a combined

stop and eccentric device for regulating the size of the ruffle.

Again, it comprises a ruffling device which automatically returns to its original position when thrown out of action.

Again, the invention consists in combining with the ruffling device a folder which turns the edges of two pieces of fabric and also guides the piece to be ruffled.

Again, it comprises a combined sewing-machine and ruffling device, with actuating mechanism for the ruffling device, operative connections between the ruffling device and its actuating mechanism, with means under the control of the operator, cooperating with said operative connections for throwing the latter into and out of operation, said controlling means being relatively stationary with respect to the operative connections, whereby the said controlling means are accessibly presented to the operator irrespective of the speed of the mechanism controlled thereby and the ruffling device thrown into and out of operation without stopping or retarding the action of the sewing-machine.

Again, the invention consists of a combined ruffling and sewing machine, with means under the control of the operator for throwing the ruffling device into and out of operation without interfering with the operation of sewing, with guides for turning the edges of two pieces of fabric and guiding another piece to be ruffled between the two other pieces and delivering the same to the stitch-forming mechanism, whereby the ruffling device may be thrown into and out of operation without stopping or retarding the action of the sewing-machine, and both hands of the operator may be left free to manipulate the work.

Finally, the invention consists in various other matters hereinafter described, and referred to in the appended claims.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation, partly broken away, of a sewing and ruffling machine embodying my invention. Fig. 2 is a view similar to Fig. 1, taken upon the opposite side or rear of the machine. Fig. 3 is an end view of a sewing and ruffling machine embodying the invention. Fig. 4 is a perspective view of the head of the machine, taken from a point to the right and in front of the head. Fig. 5 is a view, partly in section, taken beneath the gooseneck or overhanging arm and looking toward the right-hand end of the machine shown in Fig. 1. Figs. 6 and 7 are detail views, partly in section, in rear and side elevation, respectively, of the devices for connecting and disconnecting the ruffling mechanism with the driving-shaft. Figs. 8 and 9 are detail views, the former in section, of the ruffler-blade support. Figs. 10 and 11 are respectively plan and side views of the throat-plate. Figs. 12, 13, and 14 are sectional, side, and plan views, respectively, of the folder. Fig. 15 is a perspective view of the presser-

foot detached; and Fig. 16 is a partial end view showing the relation of the feed, presser-foot, throat-plate, and ruffler.

The construction of the machine to which the present invention is applied is that of the ordinary "Union Special" two-line machine and need not be herein specifically referred to. The main shaft is illustrated at 1, and at a point near the rear end of the bed-plate of the machine, inside the rear bearing, it is provided with an eccentric 2, working in a block 3, which slides in ways in the fork 4 of the rocking arm 5, sleeved on the shaft 6, which is journaled in a bearing in the lug 7 on the bed of the machine. Secured to or formed with the arm 5 is a guiding lug or rib 8, formed on the arc of a circle, fitting when the ruffler is thrown into operation the groove 9 in the block 10, which block is pivotally hung between the arms of the fork 11 on the lower end of the pitman-rod 12, the latter at its upper end being freely jointed by the ball-and-stud connection 13 to the arm 14 of the rock-shaft 15, journaled on the gooseneck of the machine. At the outer end of the rock-shaft is clamped a head 16, formed on the upper end of a rod 17, this rod 17 having a link connection 18 at its lower end with the horizontal transverse bar 19, sliding in lugs 20, secured to the bracket 21, attached to the head of the machine. This bar or rod 19 at its front end has a head 22, to which is pivoted eccentrically the frame 23, having an inner projecting ledge 24, to which is attached the ruffling-blade 25, these parts 22, 23, and 25 being removed from Fig. 2, but shown clearly in Fig. 4. The frame 23 is normally kept depressed by means of the spring 26 in the head 22. It will thus be seen that as the arm 5 is rocked the ruffler-blade will be reciprocated back and forth.

To render the machine capable of doing the kind of work hereinbefore mentioned, a special form of folding-guide has been devised, comprising a plate 27, secured to the bed-plate of the machine and having a raised portion 28, to which is secured the part 29, comprising the stripper-plate 30, extending forward to a point in proximity to the needles, and three guiding-recesses—one, 31, formed by the side walls of the raised part 28, the lip 32, and the wall 33; another, 34, formed by the upwardly-curved lip 35, and the middle one, 37, formed between the walls 33 and 36 and adapted to guide the edge of the fabric which is to be ruffled, the recesses 31 and 34 serving to fold and guide the edges of the double yoke. The throat-plate 38 has a raised portion 39, substantially on a plane with the raised portion 28 of the folder-support, and the presser-foot 41 on its under side is beveled off, as at 40, in a manner to seize the goods as it falls and prevent any pulling of the same as the ruffler recedes. One part of the presser-foot 42 is pivoted to the other part and is adapted to be lowered by the action of the lever 43, whereby it may always

be made to engage the fabric being gathered, no matter of what thickness the same may be.

As a further and special improvement in machines of this character I have provided means under the control of the operator for throwing the ruffler into and out of action, and when thrown out of action for insuring its return to the proper point for again beginning its ruffling action. Referring to Figs. 1 and 5, 44 is a vertical rod depending from the table or bench on which the machine is supported and having a knee-piece 45 arranged to be manipulated by the operator. The rod 44 is secured at its upper end to the arm 46, freely pivoted to the horizontal rod 47, which at its opposite end is freely pivoted to the arm or lever 48, pivoted at its upper end to the rock-shaft 15, and having adjacent its upper end a projection 49, against which bears a spring 50, normally keeping the lower end of the lever 48 swung outwardly. To the lower end of this lever 48 is pivotally attached a link 51, also pivoted to the sliding block 10, which block 10 has a tongue on its under side riding in the groove 52, and said lever and slide are prevented from being thrown outwardly too far by the detent 53. The lever 48, near its upper end, pivotally engages the arm 54 of the rocking frame 55, pivoted on the rock-shaft 15, the arm corresponding to 54 on the opposite end of the frame having pivoted to it the link 56, which at its opposite end is pivoted to the upper end of the swinging lever 57, hung on a pivot projecting from the bracket 21. This swinging lever 57 has secured to its lower end a piece 58, having a fork 59 on its lower end, normally under the action of the spring 50, engaging the pin 60 on the ruffler-frame and keeping the latter retracted and the ruffler tilted up at its forward end against the action of the spring 26. The spring 50, of course, tends normally to keep the block 10 out of engagement with the guide 8 on the rocking arm 5, and it is only when the lever 48 is retracted against the action of said spring that the block 10 engages said guide 8 and motion is transmitted to the rock-shaft 15 to cause the ruffling action. To regulate the size of the ruffle, an eccentric indexed stop 61 is provided, against which the lever 48 strikes, thus regulating the extent of engagement of the block 10 with the arm 5, and thus the amount of throw of the rock-shaft 15.

To prevent confusion, I have called the part 5, which is, strictly speaking, a "rocking frame," an "arm," in order to distinguish it from the part 55, which is referred to as a "rocking frame," the terms "arm" and "frame" being both intended to be used in their generic sense.

When it is desired to sew in the ordinary manner, this can be done in the usual way. If desired to gather or ruffle, the knee-piece is pressed upon by the operator, the block 10 moving into engagement with the arm 5, and this action at the same time through the parts

48, 54, 55, 56, 57, and 58 causes the fork to withdraw its pressure from the pin 60 and allows the spring 26 to tilt down the forward end of the ruffler, and as the block 10 comes upon the guide 8, which is in the arc of a circle, the ruffler begins to move forward. On release of the knee-piece by the operator the block 10 moves off the guide 8, and the parts 48, 54, 55, 56, 57, 58, and 59 act to cause the last-named part to engage the pin 60 and move the bar 19 and frame toward the front of the machine, and as the block 10 moves off the guide 8 the lower end of the lever 48 will be thrown out, and thus through the described connections the piece 58 will tilt up the front end of the ruffler-blade against the spring 26. It will be noted from this construction that as soon as the block 10 moves into engagement with the end of the guide 8, which first point of engagement is practically at the pivot-point or point of minimum swing of the rocking arm 5, the ruffler will begin to operate slightly, gradually increasing until the full engagement of the block 10 with the guide 8 is accomplished, when the full ruffling action takes place, and as the parts are released by the operator and the block 10 moves off the way or guide 8 the size of the ruffle will gradually decrease. By this construction it is possible for the operator by slow manipulation of the controlling means in both directions to make a cluster of ruffles, gradually increasing in width from the point of commencement to the center and then gradually decreasing in width or tapering off from the center to the end of the ruffle. So far as I am aware, this is the first machine in which the operative connections between the ruffler-actuating mechanism and the ruffling device may be gradually brought into engagement and gradually released to form a taper or cluster set of ruffles, and I therefore claim the same broadly, whether the minimum throw of the ruffler be at the first point of contact, or vice versa, so long as the connections between the driving-shaft and the ruffling device include means whereby the ruffling device may be given strokes or movements of successively-varying lengths. Furthermore, it will be seen that by providing the means under the control of the operator for throwing the ruffler into and out of action, which are operable independent of the hands of the operator, both hands of the operator may be left free to manipulate the work, and that without stopping or retarding the action of the machine, even when running at the highest speed of which it is capable or while the machine is maintaining or is at its normal working speed, it will not be necessary to stop or retard the stitch-forming mechanism in order to throw the ruffler into and out of action. As herein shown, the controlling means which enable the operator to throw the ruffling device into and out of action do not substantially partake of the movement of the operative connections between the actuating mech-

anism and the ruffling device and are relatively stationary with respect to the mechanism controlled by said controlling means—that is to say, the controlling means are so placed with respect to the operator that they are accessibly presented to him irrespective of the speed of the mechanism controlled by them.

It will be readily seen that if the part intended to be directly manipulated by the operator for throwing the ruffling device into and out of operation were made such an essential part of the driving mechanism as to partake of its full speed it would not be practically possible with the machine running at a high rate of speed—say two thousand five hundred or three thousand stitches a minute—for the operator readily to grasp a part vibrating at such rate. Therefore I have provided a construction by which the controlling means may readily be manipulated by the operator no matter what the speed of the driving mechanism may be.

While the machine herein described and illustrated embodies a practical means of carrying my invention into effect, in which machine the means under the control of the operator are stationary with respect to the mechanism controlled thereby, still I do not wish to be understood as necessarily limiting myself to this particular embodiment. It is only necessary that the controlling means should at all times be readily accessible to the operator, and to afford such accessibility it is desirable that the part directly manipulated by the operator should not itself move at the high rate of speed of which the driving mechanism is capable. Hence it will be understood that as I believe I am the first to provide means under the control of the operator whereby on an organized high-speed sewing and ruffling machine the ruffling device may be thrown into and out of operation without requiring the action of the stitch-forming mechanism to be stopped or modified or may be thrown into and out of operation while the machine maintains or is at its normal rate of speed, I wish to claim my invention in the broadest possible way.

Various minor modifications and changes in the construction of the apparatus may be made without departing from the spirit of the invention.

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

1. The combination with a sewing-machine, of a ruffling device, means for operating it, and means, under the control of the operator, for throwing the ruffling device into and out of action without stopping or retarding the action of the stitch-forming mechanism; substantially as described.

2. The combination with a sewing-machine, of a ruffling device, with means for operating it, and means under the control of the opera-

tor for throwing the ruffling device into and out of operation, without stopping or retarding the action of the sewing-machine, said controlling means being at all times accessibly presented to the operator irrespective of the speed of the mechanism controlled thereby, whereby at high speed the ruffling device may be thrown into and out of operation, without stopping or retarding the action of the stitch-forming mechanism, said stitch-forming mechanism maintaining its normal working speed; substantially as described.

3. The combination with a sewing-machine, of a ruffling device, actuating mechanism therefor, operative connections between the two, and means under the control of the operator cooperating with said operative connections for throwing the latter into and out of operation, the actuating member of the controlling means being at all times accessibly presented to the operator, irrespective of the speed of the mechanism controlled thereby; substantially as described.

4. The combination with a sewing-machine, of a ruffling device, actuating mechanism therefor, operative connections between the two, and means under the control of the operator, cooperating with said operative connections for throwing the latter into and out of operation, said controlling means being relatively stationary with respect to the operative connections, whereby the said controlling means are accessibly presented to the operator, irrespective of the speed of the mechanism controlled thereby, and the ruffling device thrown into and out of operation without stopping or retarding the action of the sewing-machine; substantially as described.

5. The combination with a sewing-machine, of a ruffling device, actuating mechanism therefor, operative connections between the two, and means under the control of the operator, cooperating with said operative connections, for throwing the latter into and out of operation, the said controlling means being relatively stationary with respect to the operative connections and so located as to be operable independent of the hands of the operator whereby said controlling means are accessibly presented to the operator irrespective of the speed of the mechanism controlled thereby, the ruffling device may be thrown into and out of operation without stopping or retarding the action of the sewing-machine, and both hands of the operator may be left free to manipulate the work; substantially as described.

6. In combination with a sewing-machine, a ruffling device, actuating mechanism therefor, operative connections between the two, and means under the control of the operator, cooperative with said operative connections but not substantially partaking of the movement thereof, for rendering said connections operative or inoperative whereby the ruffling mechanism may be thrown into and out of

operation without stopping or retarding the action of the sewing-machine; substantially as described.

7. The combination with a sewing-machine, of a ruffling device, actuating mechanism therefor, operative connections between the two, and means under the control of the operator, coöperating with said operative connections but forming no part thereof, for throwing said operative connections into and out of engagement with the actuating mechanism, without stopping or retarding the action of the sewing-machine; substantially as described.

8. In combination with a sewing-machine, a ruffling mechanism, and means for actuating said ruffling mechanism, connections between the actuating mechanism and the ruffling mechanism, and means under the control of the operator substantially independent of said actuating mechanism and not aiding in the driving function of said operative connections, for rendering said connections operative or inoperative, whereby the ruffling mechanism may be thrown into and out of operation without stopping or retarding the action of the sewing-machine; substantially as described.

9. The combination with a sewing-machine, provided with suitable stitch-forming mechanism, and having in combination therewith means for guiding independent overlapping pieces of fabric to the stitch-forming mechanism, a ruffling device, actuating mechanism therefor, operative connections between the two, and means under the control of the operator, coöperative with said operative connections, but not substantially partaking of the movement thereof, said controlling means being adapted to be operated independently of the hands of the operator whereby the ruffling mechanism may be rendered operative or inoperative without stopping or retarding the action of the sewing-machine, and leaving both hands of the operator free to manipulate the work; substantially as described.

10. The combination with a sewing-machine, of a ruffling device, a driving-shaft, a rocking arm oscillated thereby, operative connections between the rocking arm and the ruffling device, said operative connections including a part having sliding engagement with said rocking arm, and means under the control of the operator for causing said sliding part to engage with, or be disconnected from the rocking arm, without interfering with the rotation of the driving-shaft, whereby the ruffling device may be thrown into and out of operation without interfering with the action of the sewing-machine; substantially as described.

11. In combination with a sewing-machine, a ruffling device with means for operating it, means for throwing the same into and out of operation without stopping or retarding the action of the sewing mechanism, said means under the control of the operator acting posi-

tively upon the ruffling attachment in one direction and automatically acting in the opposite direction when released by the operator; substantially as described.

12. In combination with a sewing-machine, a ruffling attachment, with means for operating it, means under the control of the operator for positively throwing the same into operation without stopping or retarding the action of the sewing mechanism, and means for throwing it out of action when the controlling means are released by the operator; substantially as described.

13. In combination with a sewing-machine, a ruffling attachment, with means for operating it, means under the control of the operator for throwing the same into and out of operation without stopping the action of the sewing mechanism, a ruffler-blade, and means whereby when the ruffling mechanism is moved out of action, the blade is automatically lifted from the work, and depressed when the ruffling mechanism is moved into action; substantially as described.

14. In combination with a sewing-machine, ruffling mechanism including a ruffling-blade, normally held in position to engage the work when its operating mechanism is thrown into action, means under the control of the operator for throwing the ruffling mechanism into and out of operation without stopping the action of the sewing mechanism, and means whereby when the ruffling mechanism is thrown out of action, the blade is raised out of contact with the work; substantially as described.

15. In combination with a sewing-machine, a ruffling mechanism, and means under the control of the operator for throwing the same into and out of operation, without interfering with the action of the sewing-machine, said ruffling mechanism including a tilting frame, a ruffling-blade carried thereby, said frame being normally depressed to cause the blade to engage the work, means for operating the ruffling mechanism, and means brought into operation when the ruffling mechanism is thrown out of action, to tilt the frame upward; substantially as described.

16. In a sewing-machine, a driving-shaft, a ruffling mechanism with means for throwing the same into and out of operative connection with the driving-shaft, a rocking frame connected to the part which is thrown into and out of engagement with the driving-shaft, a tilting ruffler-blade support, and connections between the ruffler-blade support and the rocking frame, whereby as the ruffling mechanism is thrown into action, the ruffler-blade support is released from the rocking frame; substantially as described.

17. In a sewing-machine, a tilting frame, a ruffling-blade supported thereby, mechanism for operating the ruffling-blade, and mechanism for throwing it out of action, said mechanism including the rocking frame, the arm attached thereto, normally spring-

pressed outwardly, the lever 57 attached to the opposite end of the rocking frame 55, and normally in engagement with said tilting frame which supports the ruffling-blade; substantially as described.

18. In a machine of the character described, a ruffling mechanism, and means for throwing it into and out of operation, said ruffling mechanism including a tilting ruffler-blade support, and means for tilting said support including the rocking frame 55, means to oscillate said frame when the ruffler mechanism is thrown into or out of action and connections extending between the rocking frame 55 and the tilting ruffler-blade support whereby in one position of the frame 55 the said ruffler-blade support is positively tilted while in the other position of said rocking frame, said ruffler-blade support is free to assume its normal position; substantially as described.

19. In the herein-described machine, the tilting frame, normally spring-pressed downwardly, a projection or pin on the frame, the forked piece engaging the pin or projection, a pivoted rocking frame to which the forked piece is connected, and means for swinging the pivoted frame to cause the forked piece to engage or disengage the pin or projection; substantially as described.

20. In the herein-described machine, the tilting frame normally spring-pressed downwardly, a projection or pin on the frame, the forked piece engaging the pin or projection, a pivoted rocking frame to which the forked piece is connected, a rock-shaft upon which said rocking frame is pivoted, said rocking frame and rock-shaft being connected to a common part with means for moving said common part into and out of operative engagement with the driving-shaft; substantially as described.

21. In the herein-described machine, the tilting frame normally spring-pressed downwardly, a projection or pin on the frame, the forked piece engaging the pin or projection, a pivoted rocking frame to which the forked piece is connected, a rock-shaft upon which said rocking frame is pivoted, a pivoted sliding block as 10, an arm as 5, operated from the main shaft, said frame having a guide to engage the block 10, the pitman 12 connecting the rock-shaft with the block, and the levers 48 and 51 connecting the rocking frame with the block 10, whereby as the block moves out of engagement with the arm 5, the forked piece tilts the ruffler-blade support; substantially as described.

22. In a sewing-machine, a driving-shaft, a rocking frame oscillated thereby, a ruffling device, connections between the ruffling device and the rocking arm, said connections including a block slidably engaging the rocking arm, and means under the control of the operator for causing the block to engage the rocking arm or release it therefrom without interfering with the operation of sewing, and an adjustable detent for varying the extent

of engagement of the block with the rocking arm; substantially as described.

23. In combination with a sewing-machine, a driving-shaft, a ruffling device, a rocking arm, oscillated by the driving-shaft, connections between the rocking arm, and the ruffling device for operating the latter, means for controlling the length of ruffle, and means under the control of the operator for throwing the ruffling attachment into and out of operation without interfering with the action of the sewing mechanism; substantially as described.

24. In a sewing-machine, a driving-shaft, a rocking arm oscillated thereby, a ruffling device, and connections between the ruffling device and the rocking arm, said connections including a rock-shaft, a block having a sliding engagement with the rocking arm, a crank-and-pitman connection between the block and the rock-shaft, whereby in the operation of the rocking arm the ruffler is operated, means for forcing the block into engagement with the rocking arm, and means for throwing the block out of engagement with the rocking arm when the ruffling action is no longer desired; substantially as described.

25. In a sewing-machine, a driving-shaft, a rocking arm oscillated thereby, a ruffling device, and connections between the ruffling device and rocking arm, said connections including a rock-shaft, a block having a sliding engagement with the rocking arm, a crank-and-pitman connection between the block and the rock-shaft, whereby in the operation of the rocking arm the ruffler is operated, means for forcing the block into engagement with the rocking arm, and means for throwing the block out of engagement with the rocking arm when the ruffling action is no longer desired, said means including an independent device for operating the ruffler whereby the latter is returned to the commencement of its stroke; substantially as described.

26. In a sewing-machine, a driving-shaft, a rocking arm oscillated thereby, and having a transverse rib thereon, a block provided with a groove engaging said rib, a pitman to which said block is pivotally hung, a rock-shaft having a crank connection with said pitman, and a ruffler operatively connected with said rock-shaft, said operative connections between the ruffler and the rock-shaft including a sliding bar to which the ruffler is attached, and oscillating connections between the bar and the rock-shaft; substantially as described.

27. In a sewing-machine, in combination with a ruffling attachment and means for operating it, means for throwing the ruffler into position to engage the work, said means comprising a lever under the control of the operator, a swinging arm, a rocking frame connected to said arm, and connections between the end of the rocking frame and the ruffler-supporting device, whereby when the driving connections for the ruffler are out of engagement the ruffler will be thrown out of

engagement with the work; substantially as described.

28. In a sewing-machine, a driving-shaft, a ruffling mechanism, including a ruffling-blade, and operative connections between the ruffling mechanism and the driving-shaft for operating the former, means for disconnecting the ruffling mechanism from the driving-shaft, and mechanism operated when the ruffling mechanism is disconnected from said driving-shaft, for returning the ruffling-blade to a position out of engagement with the work; substantially as described.

29. In a sewing-machine, a driving-shaft, a ruffling mechanism, including a ruffling-blade, and operative connections between the ruffling mechanism and the driving-shaft for operating the former, means for disconnecting the ruffling mechanism from the driving-shaft, and mechanism operated when the ruffling mechanism is disconnected from the driving-shaft, for returning the ruffler-blade to a position out of engagement with the work, said mechanism including a pivoted lever engaging the ruffler to force it back and tilt it up; substantially as described.

30. In a sewing and ruffling machine, suitable stitch-forming mechanism, a ruffling device including a ruffling-blade and its support, and means under the control of the operator for connecting and disconnecting the ruffling device from the driving-shaft without interfering with the operation of sewing, a swinging arm, a rocking frame, connections between the end of the rocking frame and the ruffler-blade support adapted to be thrown into operation when the ruffler-driving mechanism is disengaged from the driving-shaft; substantially as described.

31. In a sewing and ruffling machine, suitable stitch-forming mechanism, a ruffling device, including a ruffling-blade and its support, and means under the control of the operator for operating the ruffling device without interfering with the operation of sewing, a swinging arm, a rocking frame, connections between the ends of the rocking frame and the ruffler-blade support adapted to be thrown into operation when the ruffler-driving mechanism is disengaged from the driving-shaft, and means for normally holding the ruffler-driving mechanism out of operative engagement with the driving-shaft; substantially as described.

32. In a sewing-machine, a driving-shaft, a rocking arm oscillated thereby, a ruffling device, connections between the ruffling device and the rocking arm, said connections including an elongated engaging surface, and means connected with the ruffling device to engage said surface to a variable extent, said means being under the control of the operator; whereby the ruffling device may be op-

erated with gradually-increasing throw from the time of first contact of the operative connections with the rocking arm until the full engagement takes place and vice versa; substantially as described.

33. In a combined sewing and ruffling machine, a ruffling device, actuating mechanism therefor, operative connections between the two and means for throwing the operative connections into and out of engagement with the actuating mechanism while the machine is in operation, the coengaging members of the operative connections and actuating mechanism including means whereby the operator may impart a gradually-increasing throw to the ruffling device from the point of first contact to the maximum point of engagement; substantially as described.

34. In a combined ruffling and sewing machine, a ruffling device, actuating mechanism therefor including a rocking arm, operative connections between the rocking arm and the ruffling device, said operative connections being movable into and out of engagement with the rocking arm, the first point of engagement being substantially in line with the axis on which the arm rocks, whereby at that point the throw of the ruffler is least, and gradually increases as the operative connections move into engagement with the rocking arm; substantially as described.

35. In a combined ruffling and sewing machine, a ruffling device, actuating mechanism therefor, including a rocking arm, operative connections between the rocking arm and the ruffling device, said operative connections being movable into and out of engagement with the rocking arm, the first point of engagement being substantially in line with the axis on which the arm rocks, whereby at that point the throw of the ruffler is least, and gradually increases as the operative connections move into engagement with the rocking arm, and an adjustable detent for varying the extent of engagement of the operative connections with the rocking arm; substantially as described.

36. In a sewing-machine, a driving-shaft, a ruffling device, and operative connections between the driving-shaft and the ruffling device for operating the latter, said connections between the driving-shaft and the ruffling device, including means whereby said ruffling device may be given strokes or movements of successively-varying lengths; substantially as described.

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

RUSSEL G. WOODWARD.

Witnesses:

MASON TROWBRIDGE,  
CHESTER MCNEIL.