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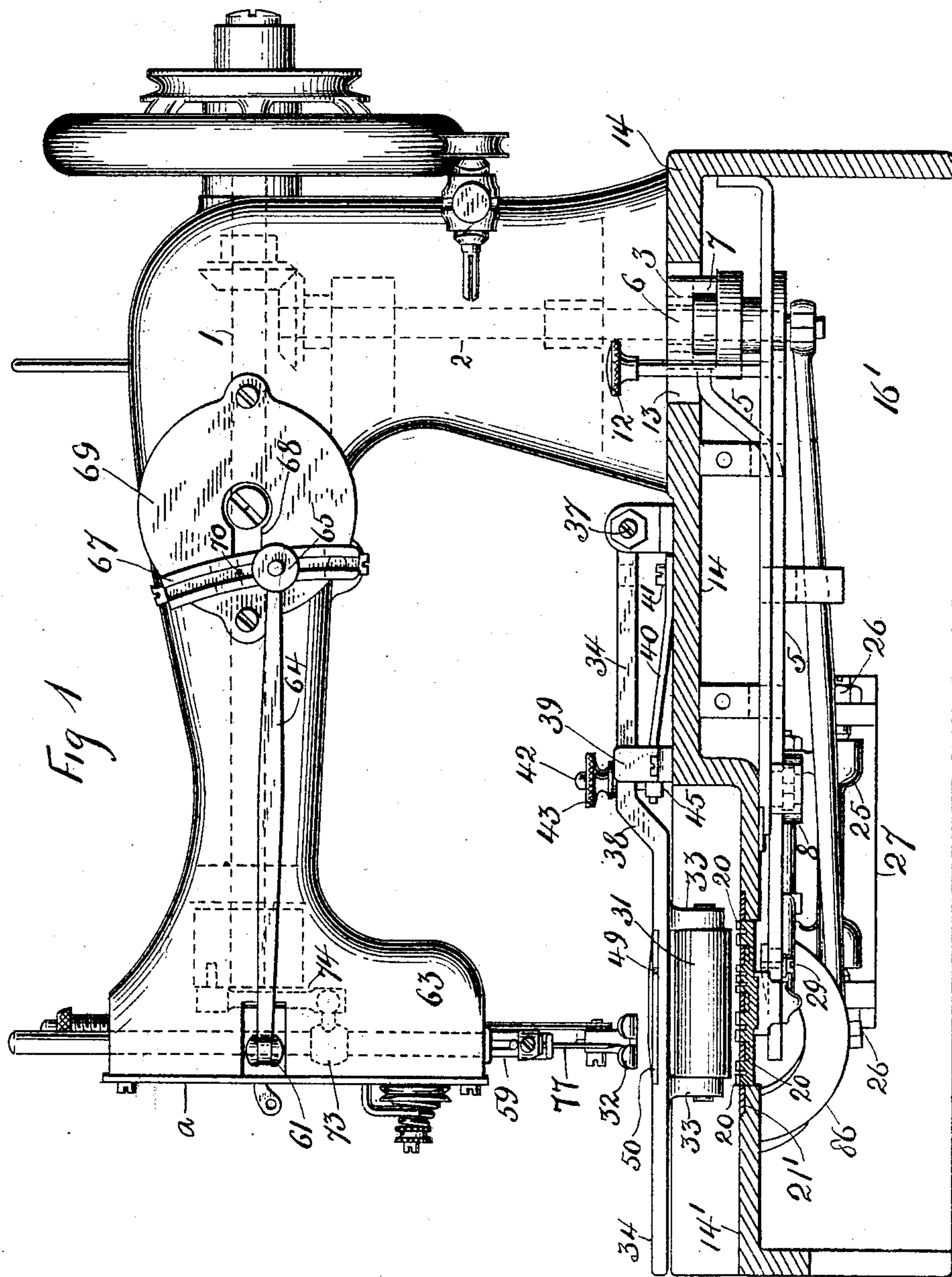
PATENTED NOV. 8, 1904.

C. F. FILOR.  
BLINDSTITCHING SEWING MACHINE.

APPLICATION FILED OCT. 4, 1902.

NO MODEL.

9 SHEETS—SHEET 1.



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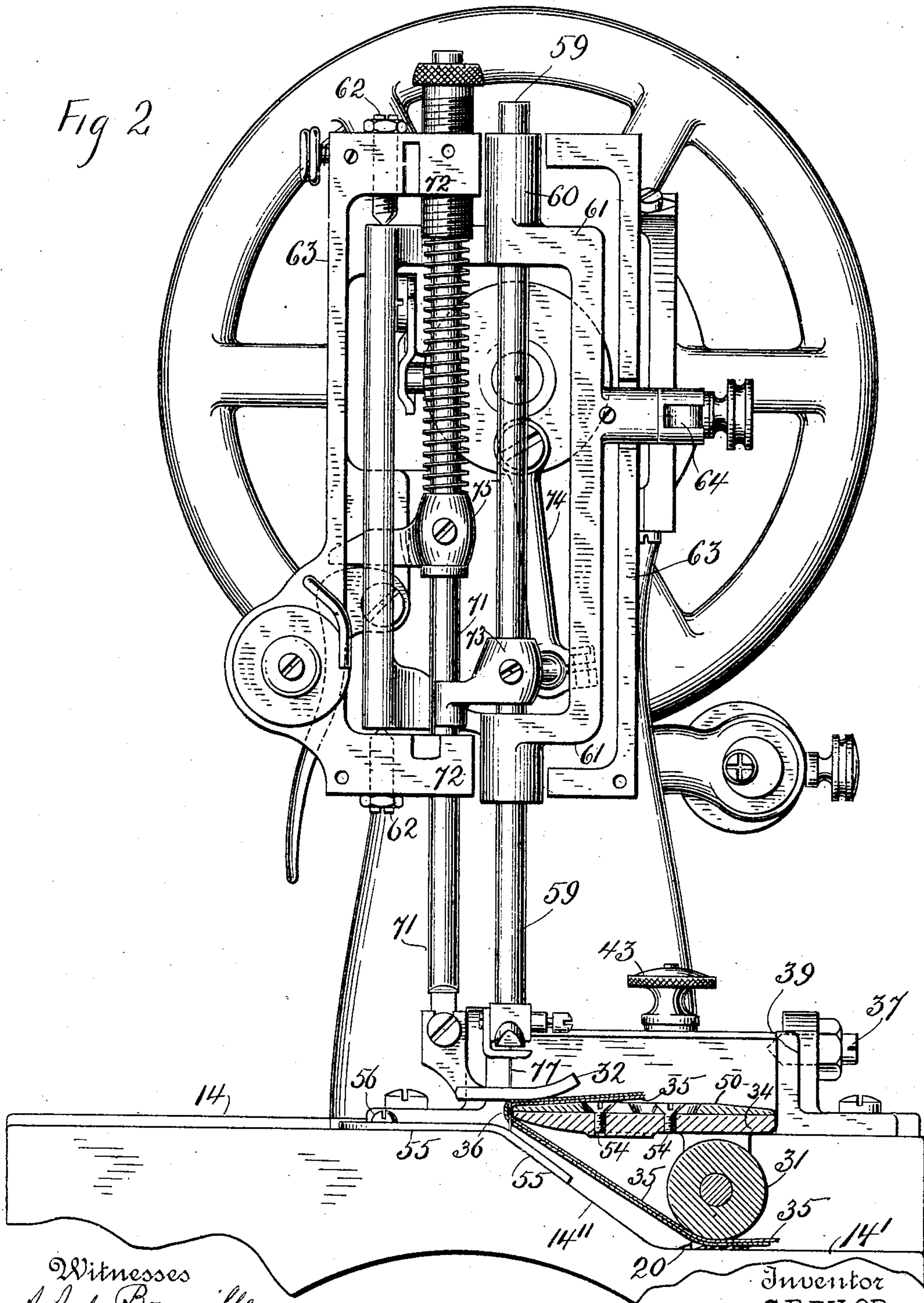
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9 SHEETS—SHEET 2.

Fig 2



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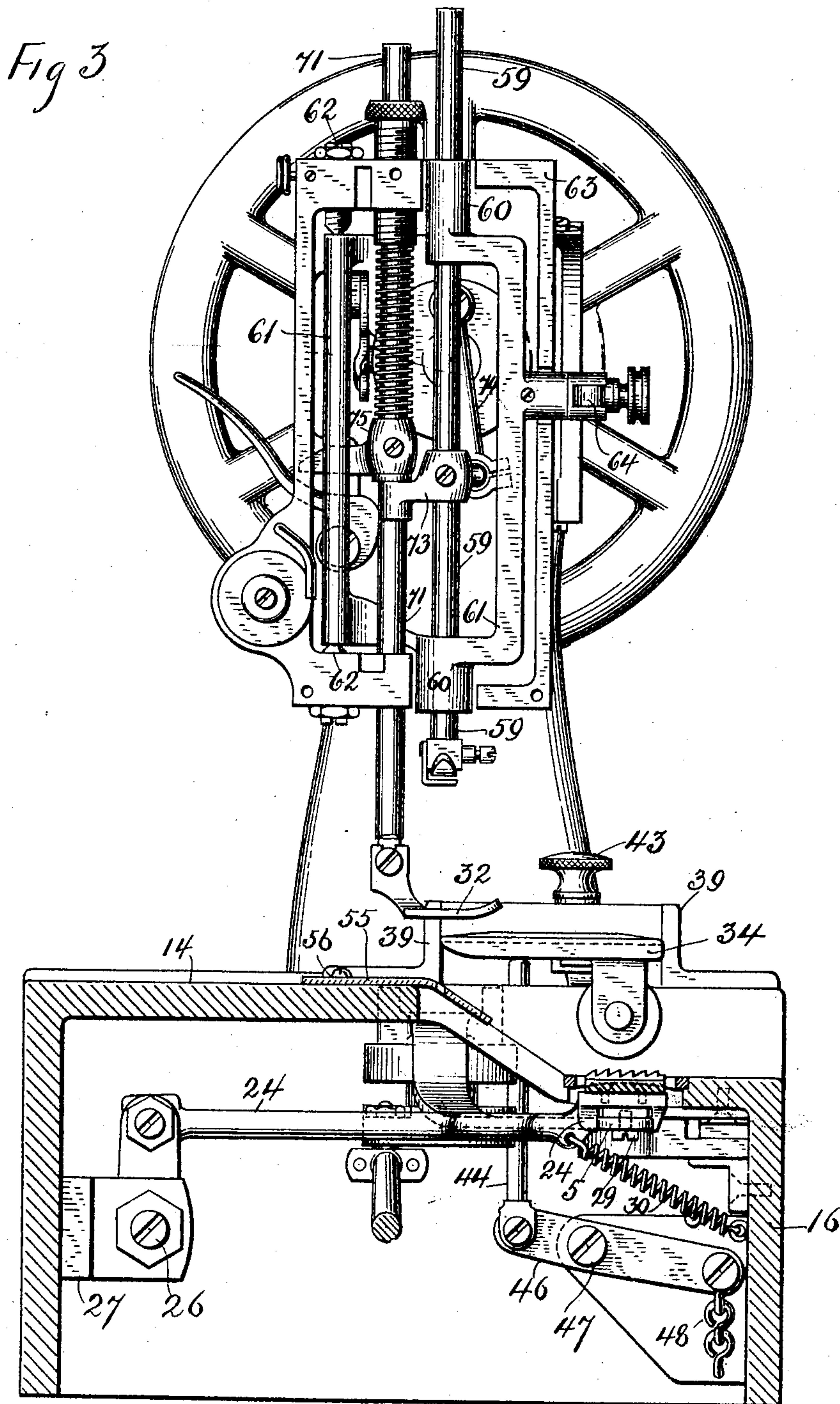
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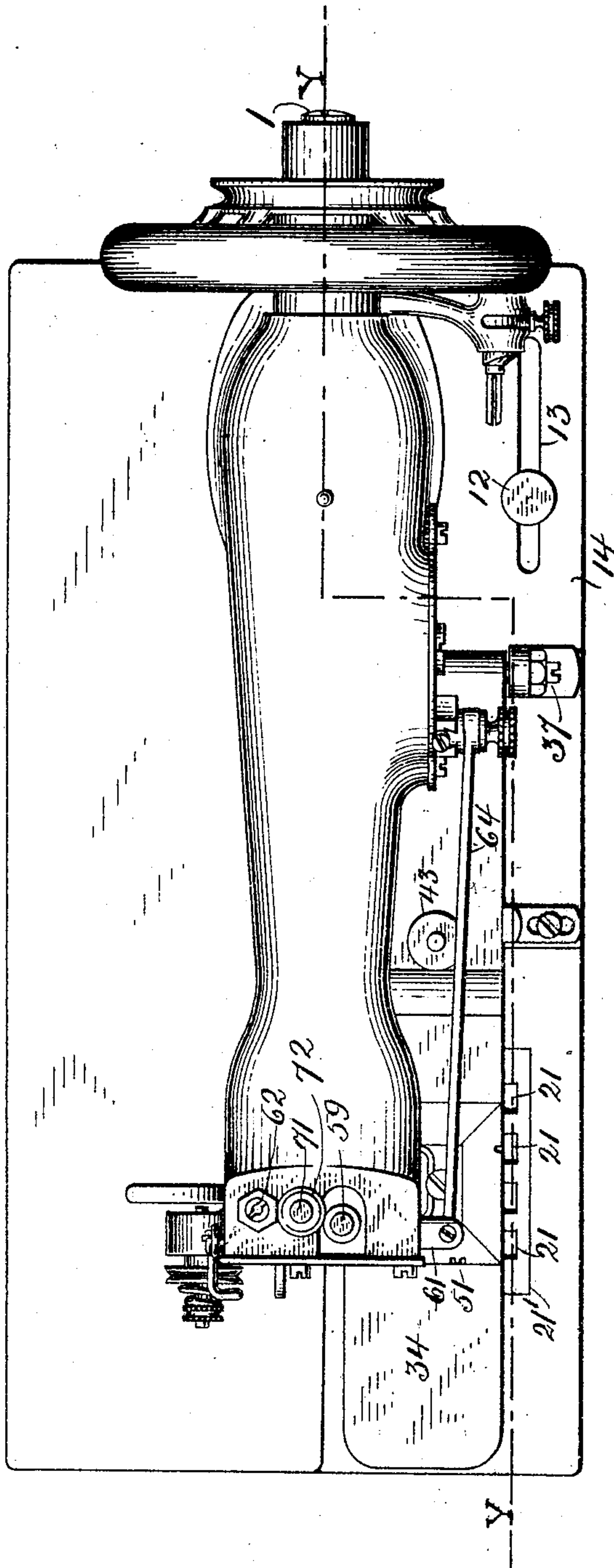
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9 SHEETS—SHEET 4.



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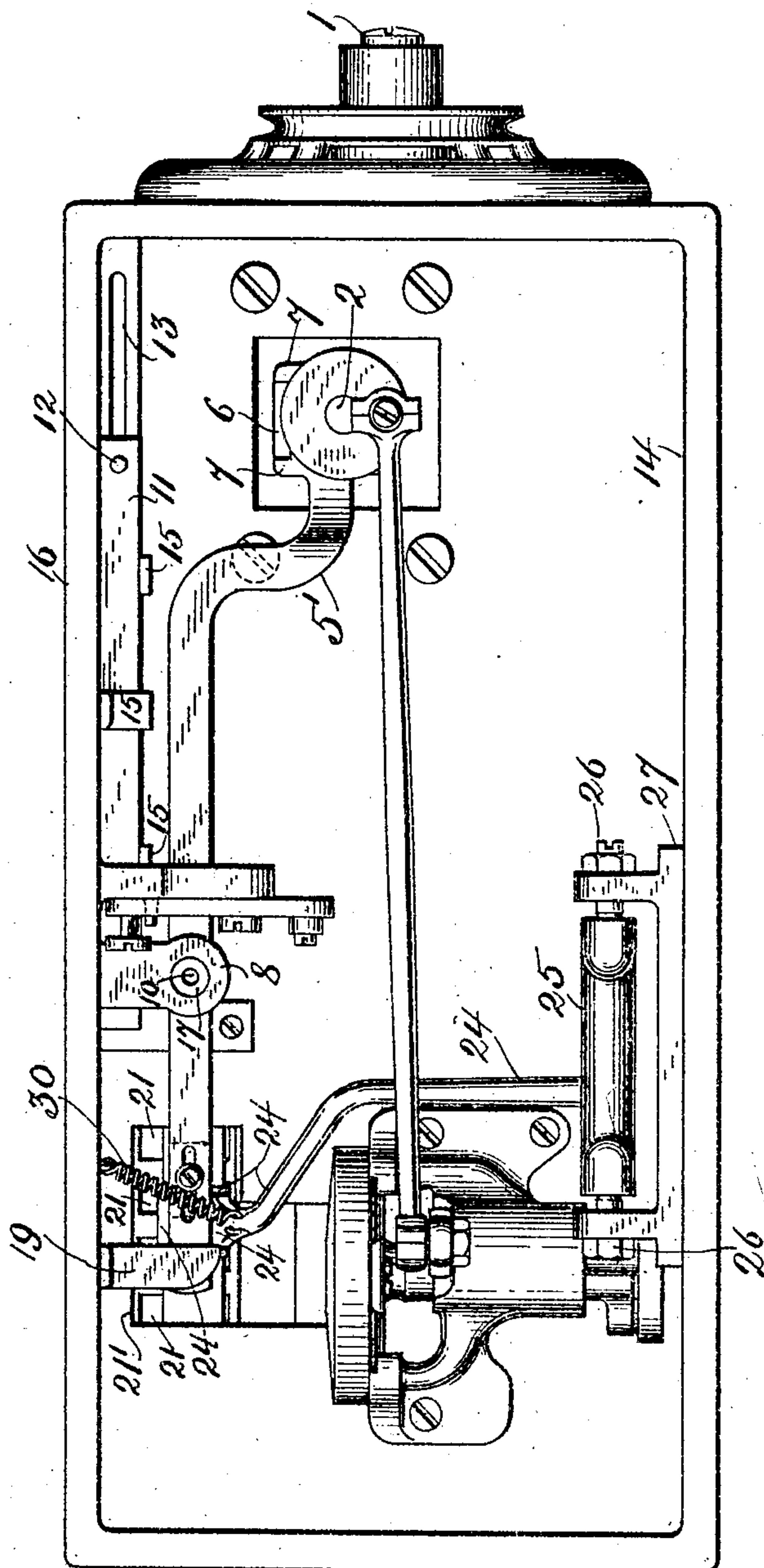
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9 SHEETS—SHEET 5.

Fig 5



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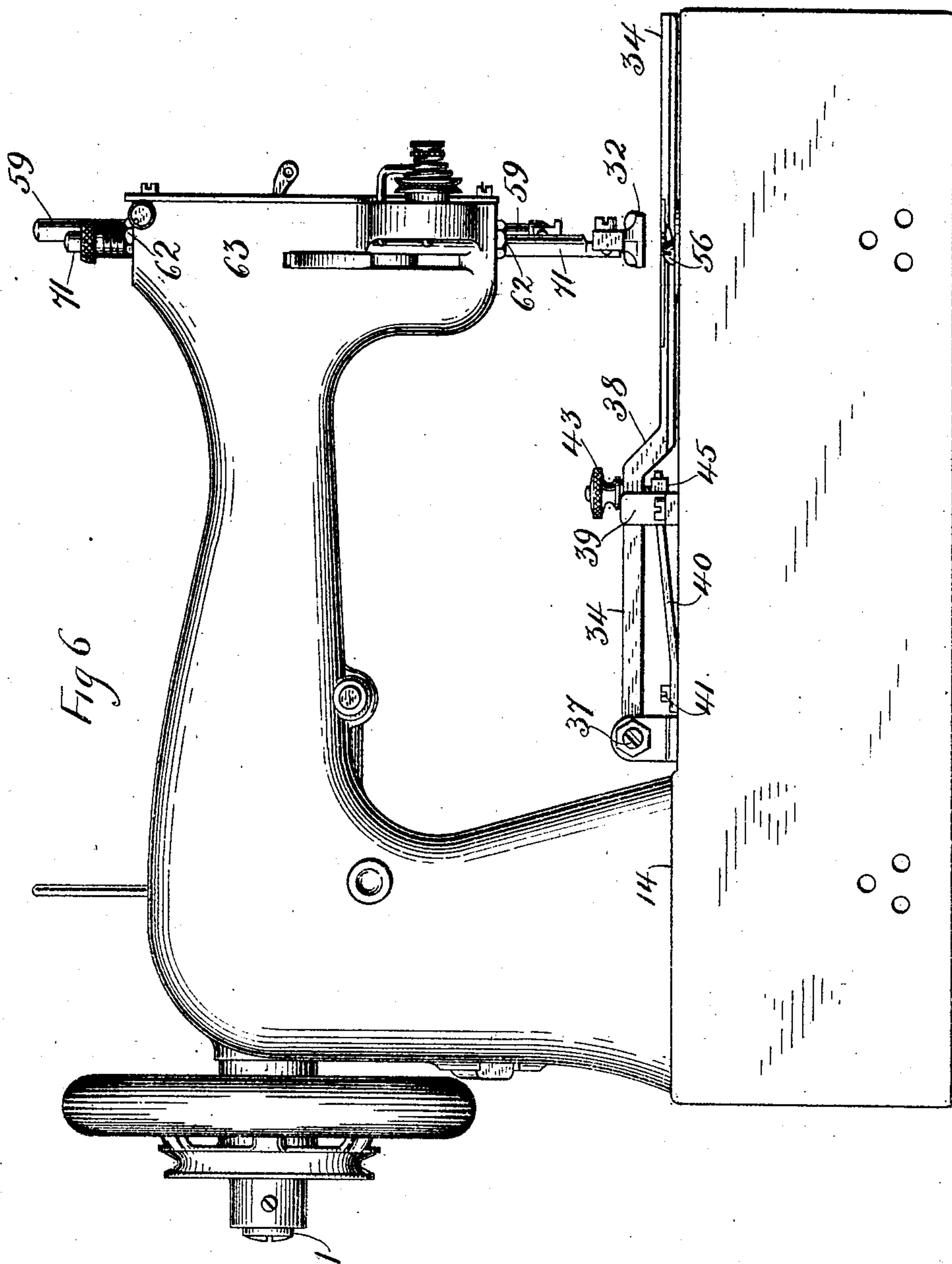
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9 SHEETS—SHEET 6.



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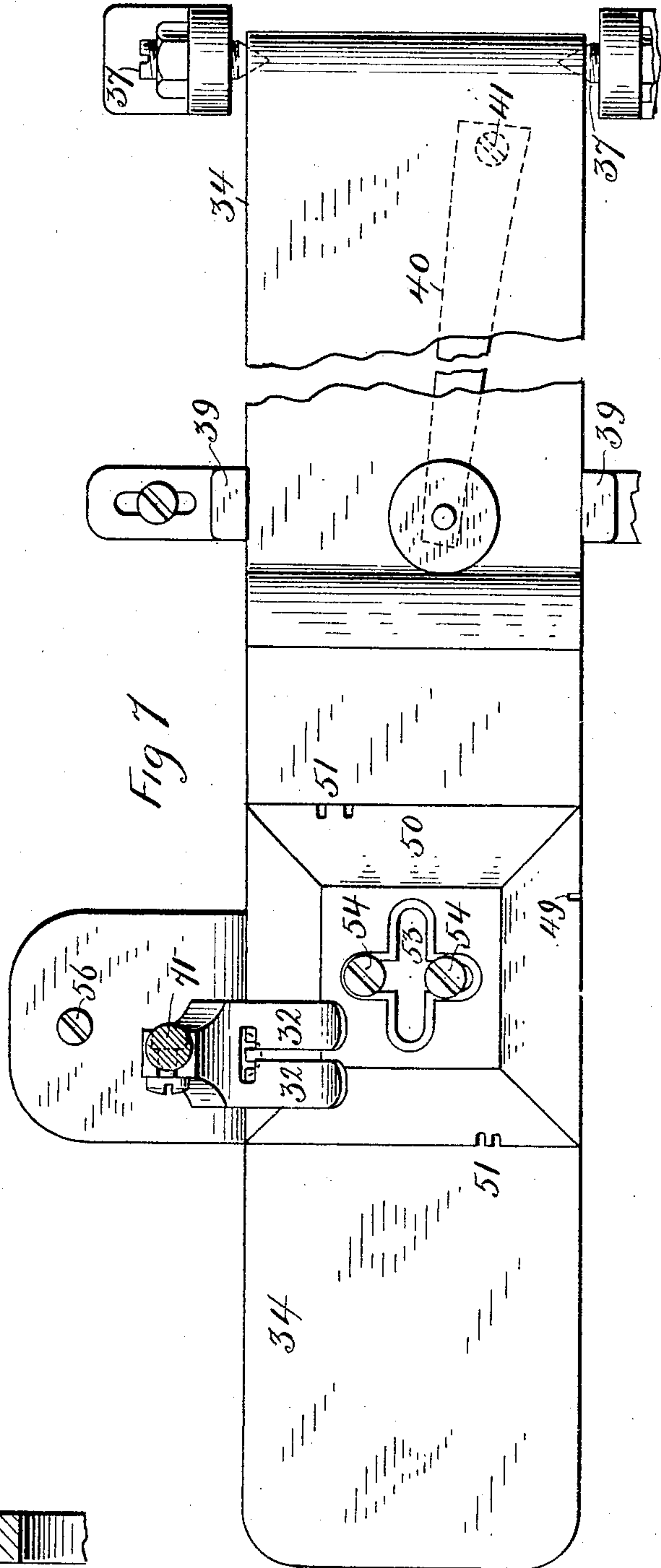
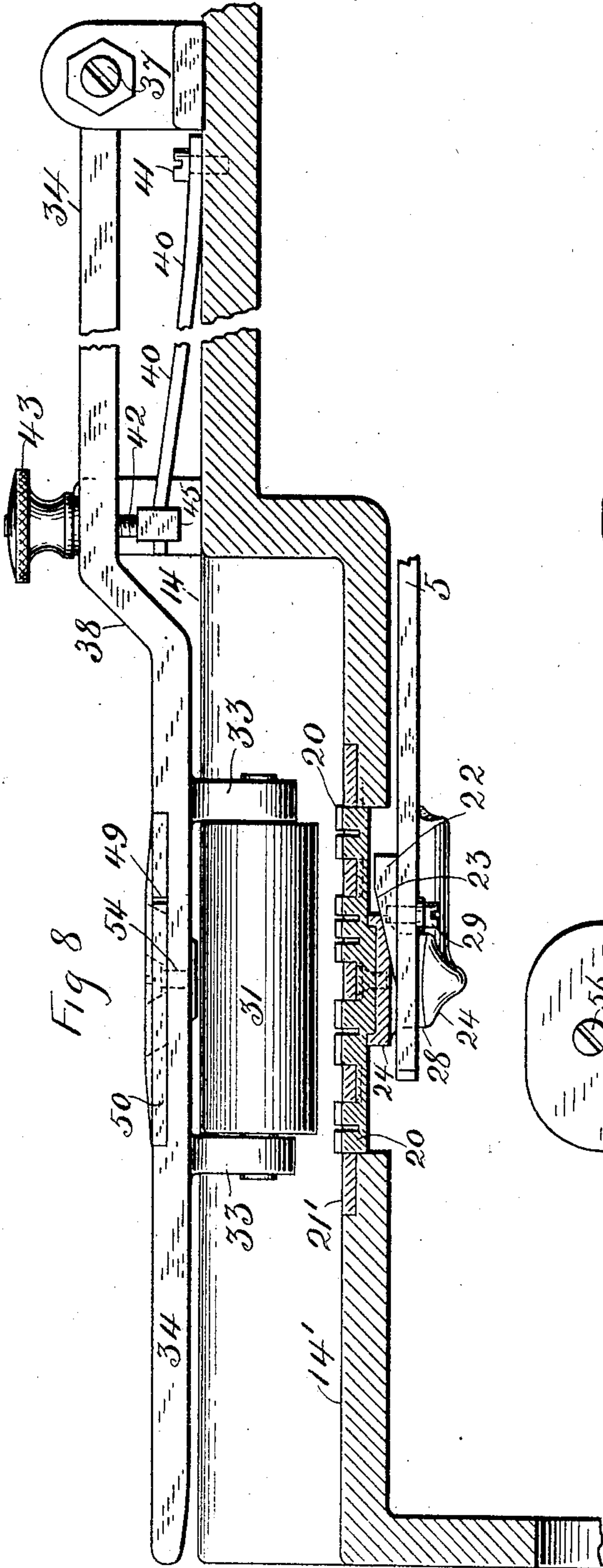
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9 SHEETS—SHEET 7.



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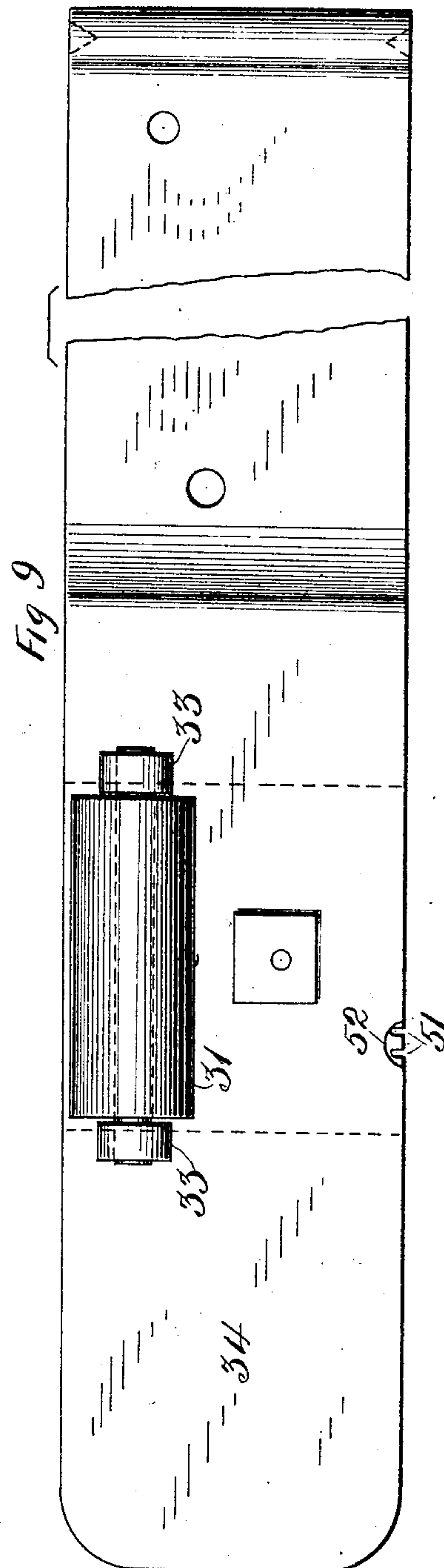
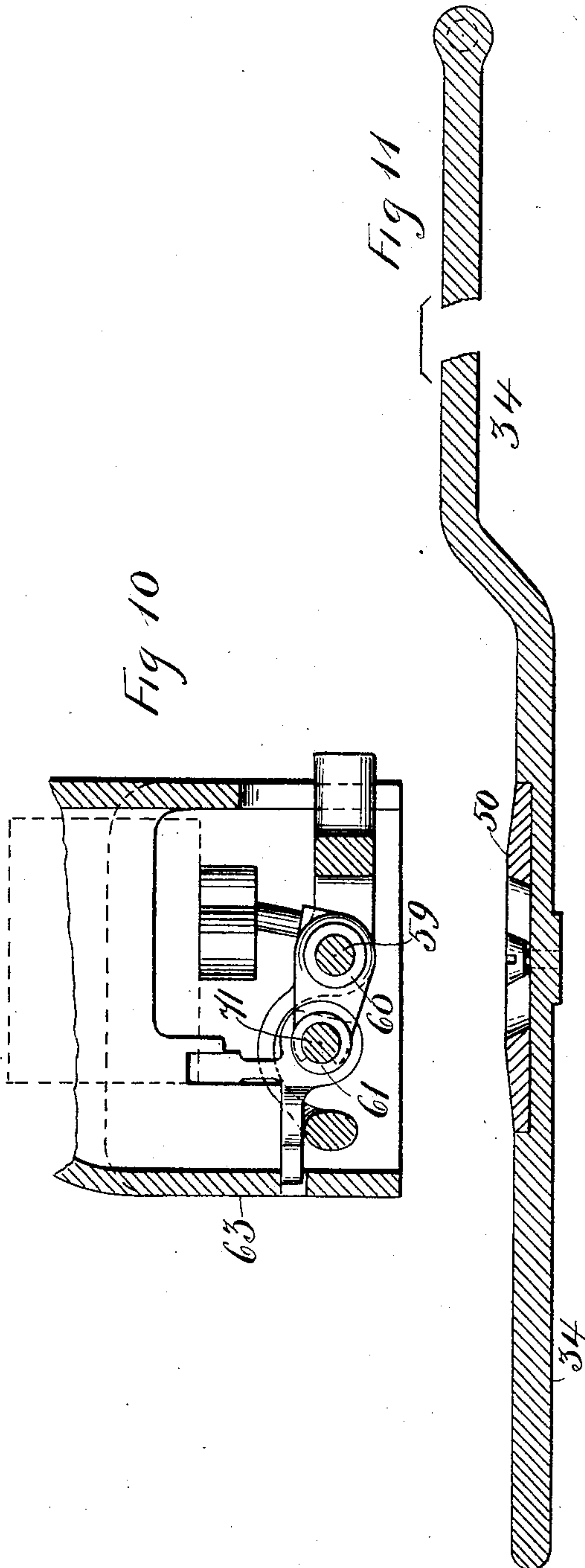
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9 SHEETS—SHEET 8.



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9 SHEETS—SHEET 9.

Fig 12

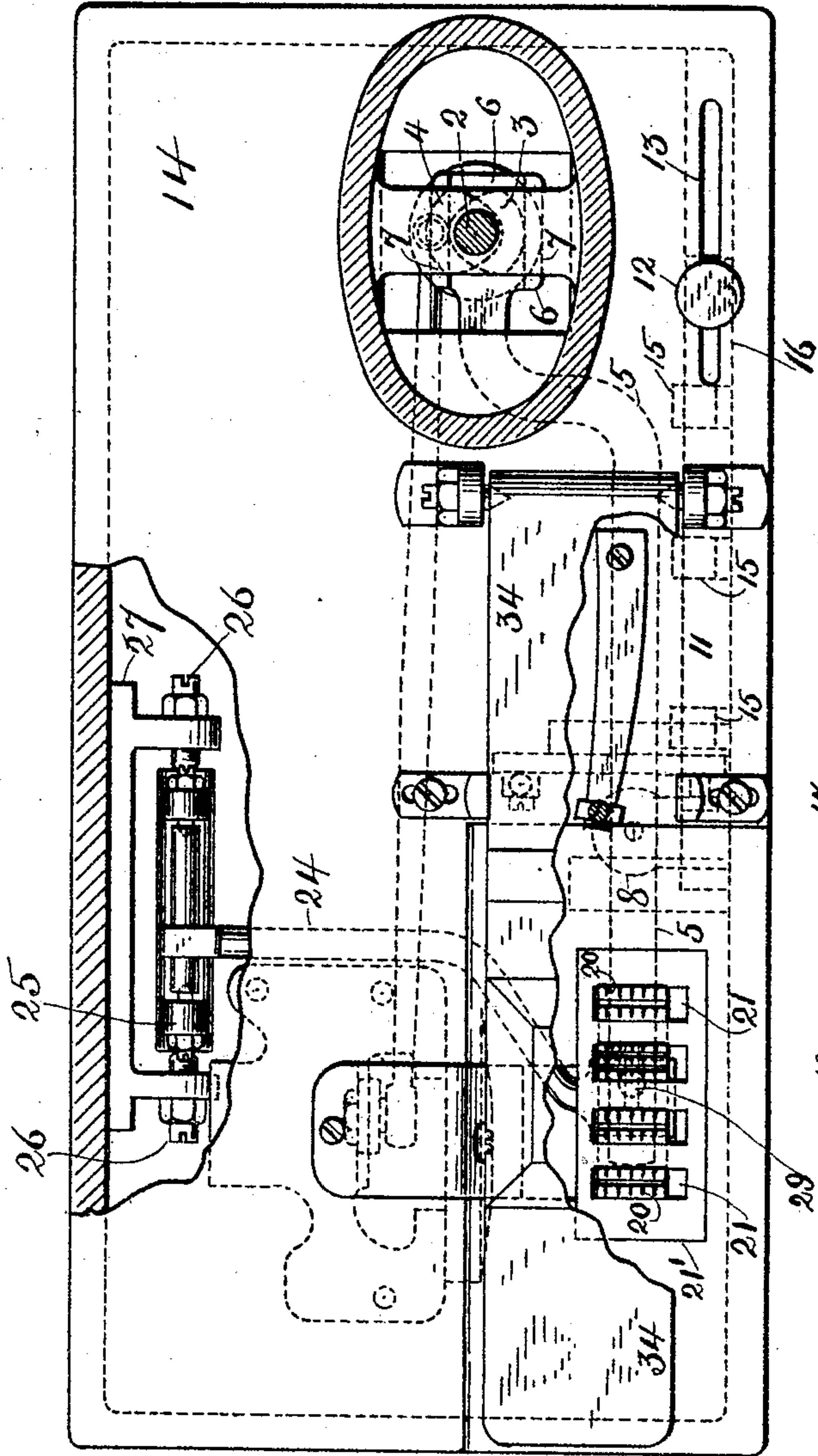


Fig 12a

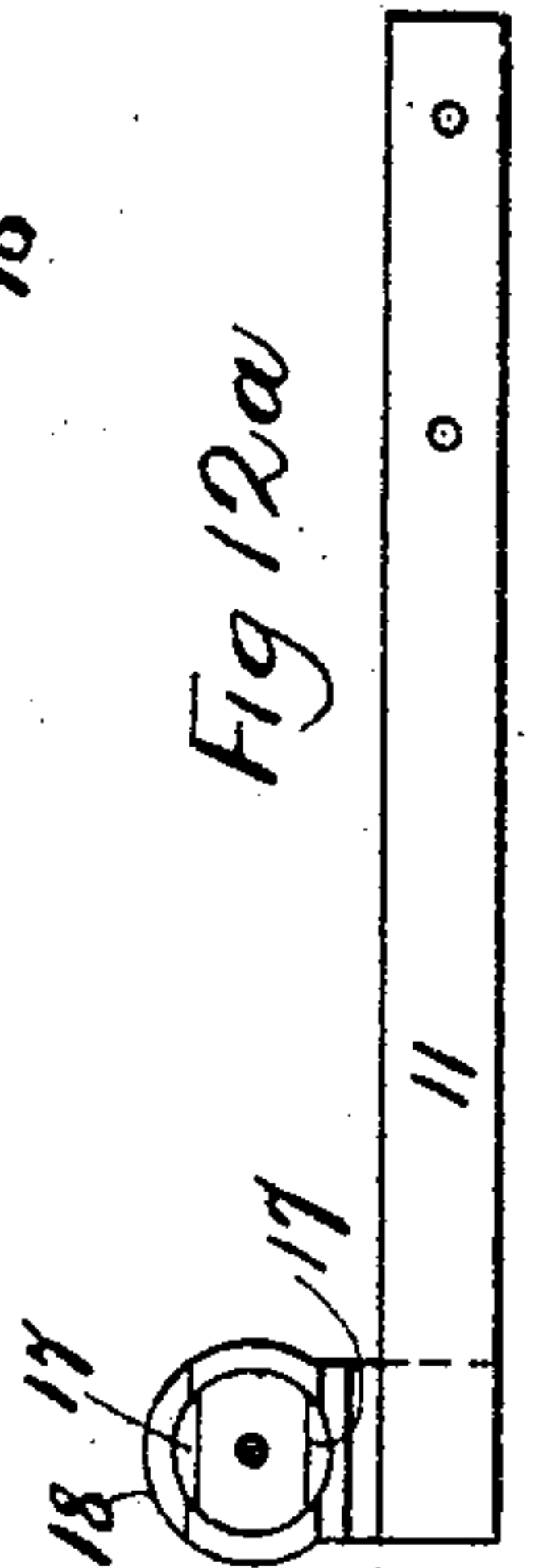
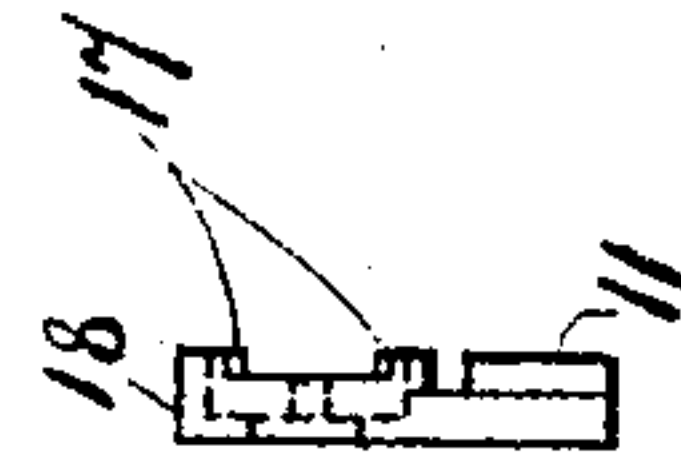


Fig 12b



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# UNITED STATES PATENT OFFICE.

CHARLES FRANCIS FILOR, OF TRENTON, NEW JERSEY, ASSIGNOR TO THE  
PERFECTION BLIND AND LOCK STITCH SEWING MACHINE COMPANY,  
OF TRENTON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

## BLINDSTITCHING SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 774,722, dated November 8, 1904.

Application filed October 4, 1902. Serial No. 125,854. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES FRANCIS FILOR, a citizen of the United States of America, and a resident of Trenton, in the county of Mercer and State of New Jersey, have invented certain new and useful Improvements in Blind-stitching Sewing-Machines, of which the following is a specification.

Without regard to the exact scope of the invention, which is attended to in the claims, the general organization of the sewing-machine consists of a needle-bar, means for vibrating said needle-bar, and mechanism for changing the extent of the vibrations, a work-carrying lever, of an adjustable cloth-plate mounted upon said lever and having pairs of notches, said pairs of notches being differently spaced for the various widths of stitches provided for by the different vibrations of the needle-bar, and a roller between said lever and said feed-dog, with its axis parallel to the length of said lever.

Figure 1 is an elevation of the portion of the machine that is above the bed-plate thereof and a vertical partial section of the bed-plate to show the interior parts thereof at about the lines Y Y in Fig. 4. By thus omitting the front portion of the walls of the bed-plate the observer may see a side elevation of the whole mechanism. Fig. 2 is intended to show the appearance of the machine from the left-hand end of Fig. 1 with the cover *a* removed and with the end wall of the bed-plate removed. In order to show the material in position during operation, the roller 31 and work-carrying lever 34, as well as the material, are shown in vertical section. Fig. 3 shows about the same as Fig. 2, only in a different phase, and the parts in section in Fig. 2 are not in section in Fig. 3, and the cloth or material is omitted. The mechanism under the bed-plate (seen in side elevation in Fig. 1) is shown partly in section in Fig. 3 at a line passing through the compound feed-dog. In Fig. 2 the presser-foot is down. In Fig. 3 it is up, and in each figure the other mechanism has the phases belonging to these positions of the presser-foot 32. The cover

*a* is omitted in Fig. 3. Fig. 4 is a plan of the whole machine without any omissions and sections. Figs. 1 and 4 are on about the same scale; but Figs. 2 and 3 are on a much larger scale. Fig. 5 is on about the same scale as Figs. 1 and 4, and it is an inverted plan of the whole machine, showing the same as looked at on an opposite direction from that in which Fig. 4 is viewed. Fig. 6 is a rear elevation of the whole machine, showing that side which is opposite to that side which is shown in Fig. 1. Fig. 7 is a plan like Fig. 4 with the head and its adjuncts and bed-plate omitted in order to illustrate the construction of the spring-pressed work-carrying lever, the spring being shown dotted where it is below the lever and portions being broken away. The presser-foot is shown with its bar in section. The remaining parts below the lever 34 are not represented. Fig. 8 is a side view of substantially all that is shown in Fig. 7 except the presser-foot, and a section of the feed-dog and of the bed-plate and a portion of the feed mechanism are added. Fig. 9 is an inverted plan of the work-carrying lever, a portion being broken out. The roller belonging to the lever is shown too. Fig. 10 is a horizontal section of the needle-bar-carrying frame and head 63 at about one of the positions of the yoke 73. Fig. 11 is a vertical longitudinal central sectional view of the work-carrying lever with the adjustable notched plate 50. Fig. 12 is a plan of the bed-plate, the head being cut off and portions of the bed-plate being cut away to partly exhibit the mechanism underneath the same, the remainder of that mechanism being shown dotted. Figs. 12<sup>a</sup> and 12<sup>b</sup> are different views of the movable fulcrum of the feed-dog mechanism.

The main horizontal shaft is 1, and the main vertical shaft is 2. The feed mechanism is operated by the two cams 3 and 4, both of which are on shaft 2. These cams 3 and 4 are so located as to engage with the compound fork on the feed-dog-operating lever 5. The fork for the cam 3 is indicated at 6, and the fork for the cam 4 is at 7.



The rotation of the vertical shaft 2 turns the cams 3 and 4, and thereby operates the lever 5 for manipulating the feed-dog. The fulcrum for the lever 5 is at 8. The fulcrum 8 has a groove 9, in which is located the lever 5. The fulcrum can be adjusted to different parts of the lever. The hole 10 is for oiling the bearing-surface between the lever 5 and fulcrum 8, which is fastened upon a longitudinal rod 11, having a screw-handle 12 secured thereto and passing upward through a slot 13 in the bed-plate 14. The rod 11 is mounted in guide-brackets 15, projecting from the side wall 16 of the bed-plate. By moving the screw 12 to and fro the fulcrum is moved to different positions on the lever 5. The fulcrum consists of a steel bearing 17, having a groove a little narrower than the groove in the socket 18 for two purposes—first, to subject the steel bearing 17 to the wearing action and to leave room for small vibrations of the lever 5 without striking against the socket 18. The bearing 17 lies loosely in the socket 18 to prevent a rocking motion of the lever 5. The bearing for the end of lever 5 is 19, which is fastened on the wall 16. This bracket or bearing offers a resistance or support for the lever 5 when the latter is pressed down by the work-carrying lever hereinafter described. The bend 5' is for directing the lever 5 to a lateral position under the feed-dog 20, which is in the holes 21. This feed-dog consists of several sets of teeth extending upward through the holes 21. The object of the lever 5 is to impart, first, an upward motion of the feed-dog to engage the material worked upon, then to move the feed-dog horizontally toward the operator, then downward, and then horizontally away from the operator or front of the machine, as shown in Fig. 1, thereby producing four motions successively to said feed-dog 20. The upward motion is communicated to the feed-dog by the wedge 22, attached to the lever 5 and seen in Fig. 8. The sloping surface 23 of the wedge 22 bears against a corresponding inclined surface of a grooved lever-arm 24, which supports the feed-dog 20 and which extends from a rock-shaft 25, bounded between center screws 26, which are carried by a bracket 27 on the side wall 16'. When the lever 5 moves longitudinally to the left, the wedge 22 causes an upward movement of the feed-dog 20. When the lever 5 moves toward the operator, the lever-arm 24 being grooved carries the feed-dog 20 with it, because the lever 5 is located in said groove, which is numbered 28. Likewise when one of the cams on the shaft 2 moves the lever-arm 24 away from the front of the machine the feed-dog for the same reason recedes from the operator, and subsequently the same cycle of operation may be indefinitely repeated.

The screw 29 fastens the wedge 22 to the lever 5. The lever 24 is bent several times

and may be seen best in Fig. 5. The downward movement of the feed-dog 20 is caused by the reaction of the retractile spring 3, one end of which is secured to the side wall 16 and the other end to the lever 24. Therefore the upward movement of the feed-dog is caused by the wedge 22, the downward movement by the spring 30, and both of the lateral movements by the respective cams 3 and 4 on the main vertical shaft 2.

An essential portion of the feed mechanism is the roller 31, which acts in conjunction with the feed-dog in such a manner as to propel the fabric or material worked upon intermittently toward the front of the machine, and this roller also acts in conjunction with the presser-foot 32 for effectually propelling the material during the operation of sewing the same. This roller has three independent motions, one, a rotary motion about its axis in the bearings 33, which project downward from a spring-pressed reciprocating work-carrying lever 34. The roller 31 serves the purpose of a presser-foot upon the material 35 when it is under the work-carrying lever 34, while 32 is the presser-foot for the material 35 when it is on top of the other side of the work-carrying lever 34. The bed-plate 14 has a depressed portion 14' approximately the diameter of the roller lower down than the main bed-plate. By this construction the material 35 is easily propelled, and yet there is a satisfactory crease 36 of the cloth at the folding edge of the lever 34. Caution should be taken to make this roller 31 of considerable diameter—say about three-fourths of an inch—so that the angle formed by the plane of the material on top of the lever 34 with the plane of the material below said lever will be about seventy degrees. The work-carrying lever 34 is pivoted between center screws 37 on the bed-plate 14, and said lever 34 is bent at 38, so that the under surface of the lever will come about flush with the bed-plate 14, as plainly indicated in Fig. 6. 39 represents brackets on the bed-plate 14 for preventing any lateral give of the lever 34. Normally the roller 31 is strongly pressed downward either against the feed-dog 20 when it is up or against the slotted plate 21', containing the holes 21, when the feed-dog is down. The spring 40 produces this pressure, one end thereof being screwed to the bed-plate 14 by the screw 41 and the other end being connected up to the vertical screw 42, passing through the lever 34 and having the adjusting milled thumb-head 43. The spring 40 passes loosely through the flat head 45 of the screw 42.

The means for raising the work-carrying lever 34 consists of a vertical rod 44, pivoted on the lever 46, whose pivot is at fulcrum 47. This lever 46 may be operated by the chain 48, a downward movement of which will lift the lever 34.

While the lever 34 is up and while the



presser-foot 32 is up, as shown in Fig. 3, the operator may easily insert the material 35 between the presser-foot 32 and the lever 34 and then down under the lever 34 and under the roller 31 and between it and the feed-dog 20. The lever 34 may now be lowered and the presser-foot 32 too. There is a notch 49 in a plate 50. This plate 50 has on the other edges pairs of notches 51. The lever 34 is cut away beneath a location of a pair of notches or a single notch at 52, (see Fig. 9,) so that the needle is in no danger of striking the lever 34. Without these notches, which are in the path of the needle, said needle would not sufficiently penetrate both of the layers of cloth 35, which are to be sewed together. The best results are obtained by adjusting this plate by the cross-slot 53 and screws 54, so that the needle enters the slot to the distance of about a small portion of the diameter of the needle—say about one-quarter.

55 is a needle-plate secured by a screw 56 to the bed-plate 14 and extending along the bed-plate and bent downward toward the lower bed-plate 14' along the slope 14'', reaching from the bed-plate 14 to the bed-plate 14'. This bent plate serves as a covering for the shuttle mechanism below, and it has a hole 57 for the passage of the needle 77.

The needle 77 is carried, as usual, by a needle-bar 59, which is vertically supported in bearings 60 on the needle-bar frame 61, pivoted by center screws 62 in the head 63 of the machine. This needle-bar frame 61 may be reciprocated for the purpose of making a zigzag stitch of any desired width.

64 is a pitman connecting the needle-bar frame 61 pivotally to a thumb-screw 65, slidable back and forth along the dovetailed arc-shaped groove 66 in the arc-shaped guide 67. The movement of the thumb-screw 65 up and down will vary the lateral throw of the needle 77, the guide 67 being thrown laterally by a cam 68 behind the face-plate 69, because of a pin 70, carried by the guide 67 and operated upon by the cam 68. The outline of this cam is not shown, as it is well known in the art. Its object is to move the guide 67 to and fro when rotated by the horizontal shaft 1.

The presser-foot 32 is carried upon a presser-foot bar 71, which is located in stationary bearings 72 in the head 63 of the arm of the machine.

Upon the needle-bar 59 is carried a yoke 73, one part of which is pivoted to the link 74, which is connected up in the usual way with the horizontal shaft 1 for reciprocating the needle up and down. The yoke 73 connects with the presser-foot bar 71 and is adapted on its upward movement to strike and lift the spring-bracket 75, which is fastened upon the bar 71. The yoke 73 and the bracket 75 are so relatively adjusted that the presser-foot 32 is lifted near the upper end of the

stroke of the needle. This spring-bracket is old, and so, also, is the means for manually lifting the same. Therefore they are not described further. Parts not described are not my invention, but are represented in order to indicate how the invention is connected up with the sewing machine of a well-known type.

I claim as my invention—

1. The combination of a work-carrying lever for a blindstitching sewing-machine, a cloth-plate mounted upon said lever and having notches in the edge thereof and a needle for the machine, movable to and fro through said notches, a bed-plate upon which said lever is mounted, a feed-dog, adjustable screw center bearings in which said lever is fulcrumed, guide-brackets mounted upon said bed-plate and between which the said work-carrying lever is movable, the said brackets being adjustable to and from said work-carrying lever, and a roller between said lever and said feed-dog with its axis parallel to the length of said lever.

2. In a blindstitching sewing-machine, the combination of a work-carrying lever having a folding edge about which the material may be folded, a cloth-plate mounted upon said lever and provided with notches, a reciprocating needle in whose paths are located said notches, a bed-plate upon which said lever is mounted, a feed-dog, a roller between said feed-dog and said lever with its axis parallel to the length of said lever, brackets suspended from said lever and supporting said roller, adjustable screw center bearings in which said lever is fulcrumed, and guide-brackets mounted upon said bed-plate and between which the said work-carrying lever is movable, the said brackets being adjustable to and from said work-carrying lever.

3. The combination of an adjustable work-carrier for a blindstitching sewing-machine an adjustable cloth-plate mounted upon said work-carrier and having notches in the edge thereof, a needle for the machine, movable to and fro through said notches, a feed-dog, and a roller between the feed-dog and said carrier, and a bed-plate for the machine, having a depression under said carrier substantially as deep as the diameter of said roller, said feed-dog being mounted in the depressed portion of said bed-plate.

4. In a blindstitching sewing-machine, the combination with an adjustable work-carrier, having a folding edge about which the material may be folded, an adjustable cloth-plate mounted upon said work-carrier and provided with notches, a reciprocating needle in whose paths are located said notches, a feed-dog, a roller between said feed-dog and said carrier and brackets suspended from said carrier and supporting said roller, the under surface of the carrier being about level with the main top surface of the bed-plate.



5. The combination in a blindstitching sewing-machine, of a reciprocating needle, feeding mechanism including a feed-dog, a spring-pressed work-carrying lever, and about which  
5 lever the material is folded with the fold in the path of the needle, means for reducing the spring-pressure upon said lever while said feed-dog is moving the material in position for another stitch, and a roller between said  
10 lever and said feed-dog with its axis parallel to the length of said lever.

6. In a blindstitching sewing-machine, the combination with stitch-forming mechanism, including a needle and a feeding mechanism,  
15 ism, a feed-dog, of a work-support comprising a work-carrying lever mounted upon the bed-plate of the machine, and fulcrumed in suitable bearings and adapted to hold the material to be stitched in the path of the needle  
20 and down upon the feed-dog, guide-brackets mounted upon said bed-plate and between which the said work-carrying lever is movable, the said brackets being adjustable to and from said work-carrying lever, which has a  
25 straight edge from its end to said guides, and a roller between said lever and said feed-dog with its axis parallel to the length of said lever.

7. In a blindstitching sewing-machine, the  
30 combination with stitch-forming mechanism, of a bed or table, and a spring-pressed work-carrying lever mounted upon said bed, adjustable screw-pivots, a presser-foot bearing upon said lever, said lever being fulcrumed be-  
35 tween said pivots, and extending straight from said pivots to beyond said presser-foot, and a roller between said lever and said feed-dog with its axis parallel to the length of said lever.

8. In a blindstitching sewing-machine, the  
40 combination with a needle-bar, means for vibrating said needle-bar, and mechanism for changing the extent of the vibrations, a work-carrying lever, of an adjustable cloth-plate mounted upon said lever and having pairs of  
45 notches, said pairs of notches being differently spaced for the various widths of stitches provided for by the different vibrations of the needle-bar, and a roller between said lever and said feed-dog with its axis parallel to the  
50 length of said lever.

9. In a blindstitching sewing-machine, the combination of a bed-plate, a spring-pressed work-carrying lever mounted upon the bed-plate, an adjustable cloth-plate mounted upon  
55 said lever and having notches in the edges thereof, a reciprocating needle in whose paths are located said notches, adjustable screw center bearings in which said lever is fulcrumed, guide-brackets mounted upon said  
60 bed-plate, between which the said spring-pressed work-carrying lever is movable, the said brackets being adjustable to and from said work-carrying lever, and a roller between

said lever and said feed-dog with its axis parallel to the length of said lever. 65

10. In a blindstitching sewing-machine, the combination of a bed-plate, a spring-pressed work-carrying lever mounted upon the bed-plate, adjustable screw center bearings, in which said lever is fulcrumed, guide-brackets  
70 mounted upon said bed, between which the said spring-pressed work-carrying lever is movable, the said brackets being adjustable to and from said work-carrying lever, and a roller between said lever and said feed-dog with its  
75 axis parallel to the length of said lever.

11. In a work-carrying lever for a blindstitching sewing-machine, the combination of a needle, an adjustable square cloth-plate mounted upon said lever and having pairs of  
80 notches arranged in three edges thereof, one edge having a single notch therein for allowing the free passage of the needle, and a roller between said lever and said feed-dog with its axis parallel to the length of said lever. 85

12. The combination in a blindstitching sewing-machine, of a reciprocating needle, feeding mechanism including a feed-dog, a work-carrying lever, and about which lever the material is folded with the fold in the path of  
90 the needle, a spring-pressed presser-foot pressing down upon said lever, means for reducing the pressure of said presser-foot upon said lever while said feed-dog is moving the material in position for another stitch, and a  
95 roller between said lever and said feed-dog with its axis parallel to the length of said lever.

13. In a sewing-machine, the combination of a work-carrying lever, a bed-plate upon which  
100 said lever is fulcrumed, a spring between said lever and said plate for elastically holding the lever against motion thereof, said plate having a depression therein, a roller carried on the under side of said lever, a feed-dog under  
105 said roller, and means for adjusting the tension of said spring.

14. In a sewing-machine, the combination of a work-carrying lever, a bed-plate upon which  
110 said lever is fulcrumed, a spring between said lever and said plate for elastically holding the lever against motion thereof, said plate having a depression therein, a roller carried on the under side of said lever, a feed-dog under  
115 said roller, and means for adjusting the tension of said spring, said means consisting of a bolt, through whose head the spring passes, and a thumb-screw nut on the screw and pressing upon said lever, said bolt passing through  
120 said lever, and the other end of the spring being fastened to said bed-plate.

Signed this 6th day of September, 1902.

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