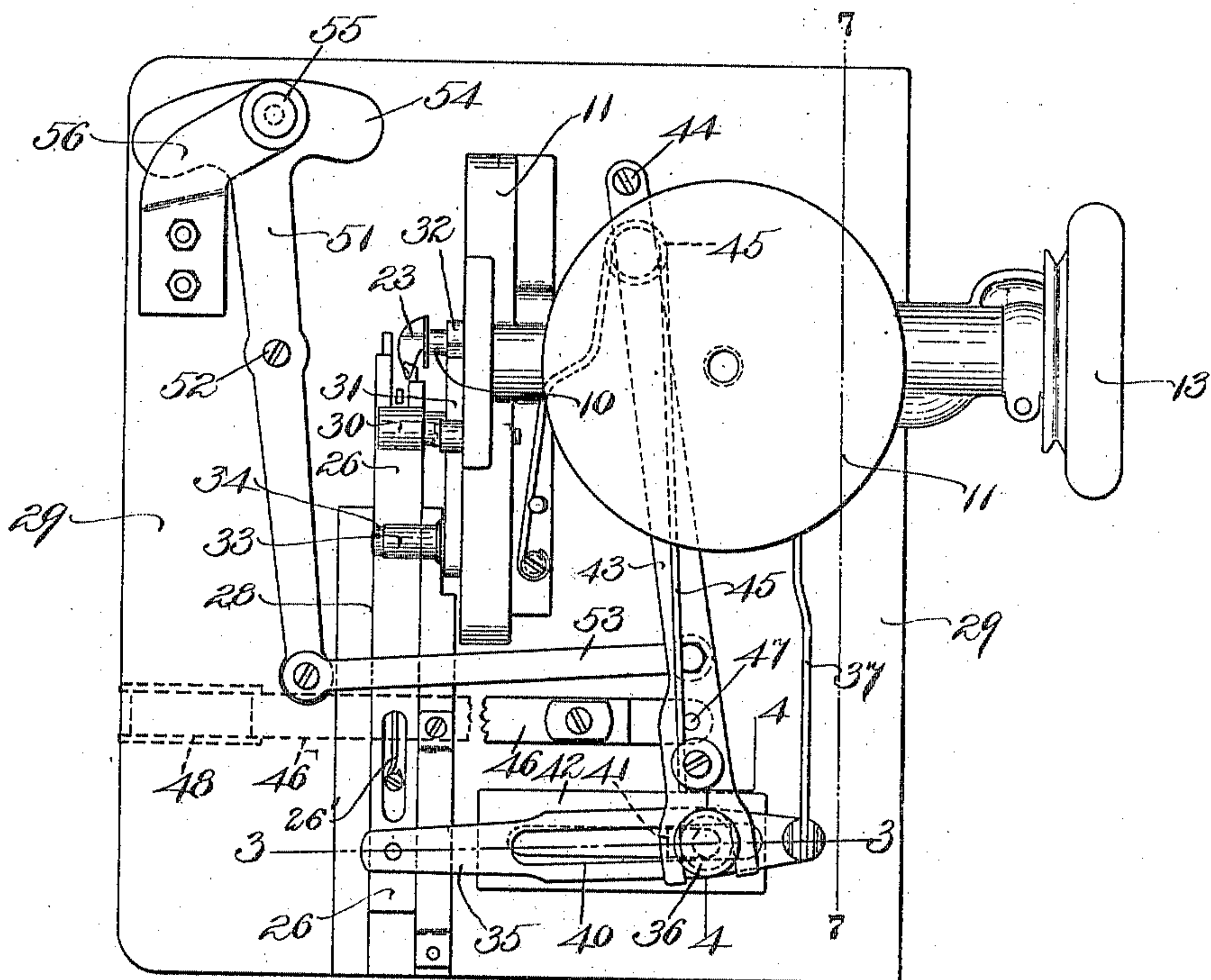
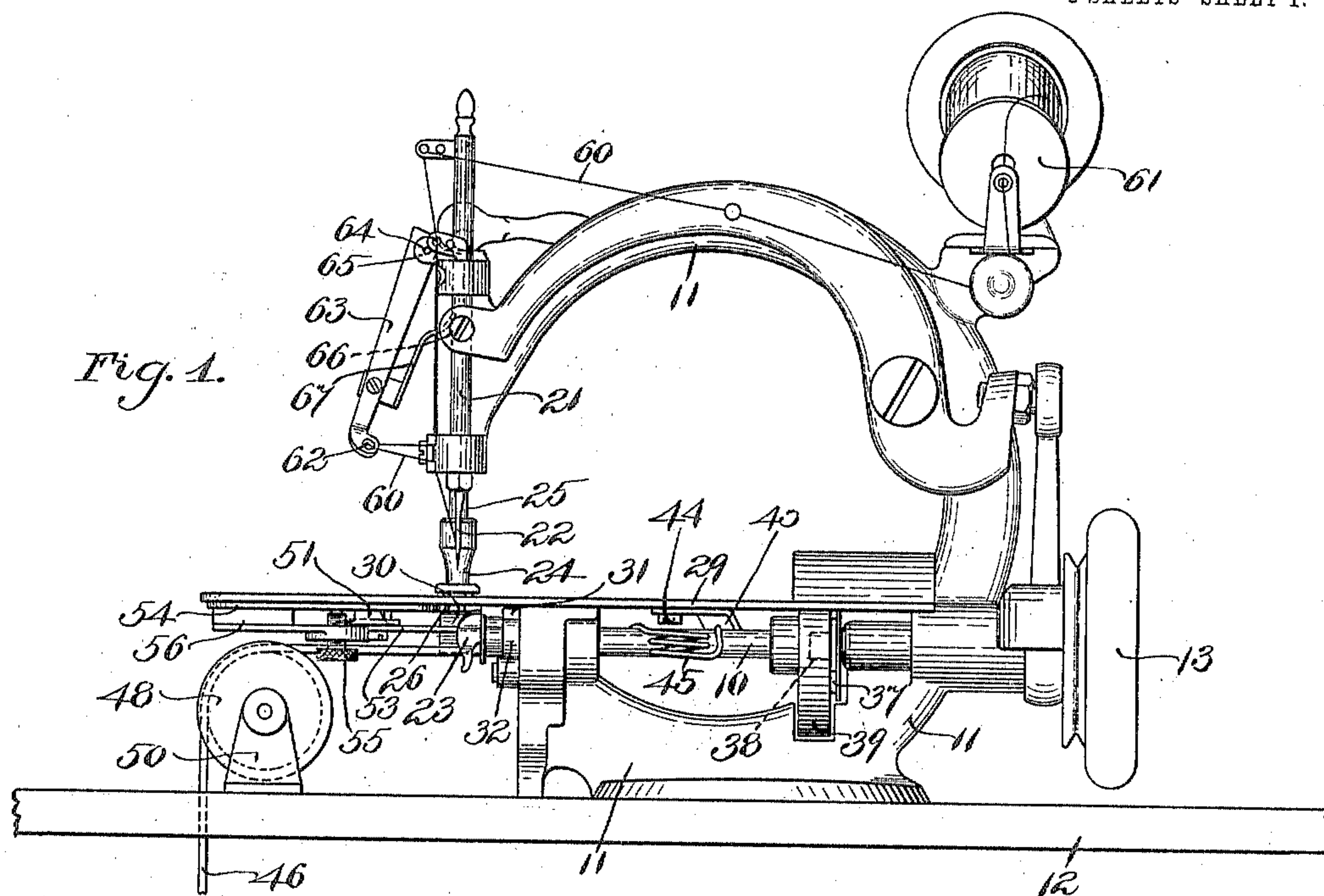


No. 817,304.

PATENTED APR. 10, 1906.

W. DUCHEMIN.  
SEWING MACHINE FEED.  
APPLICATION FILED APR. 22, 1905.

2 SHEETS—SHEET 1.



Witnesses:

Franklin E. Low.  
William C. Glass.

*Fig. 2*

Invent.  
William Duchemin,  
by his attorney, Charles S. Ford.

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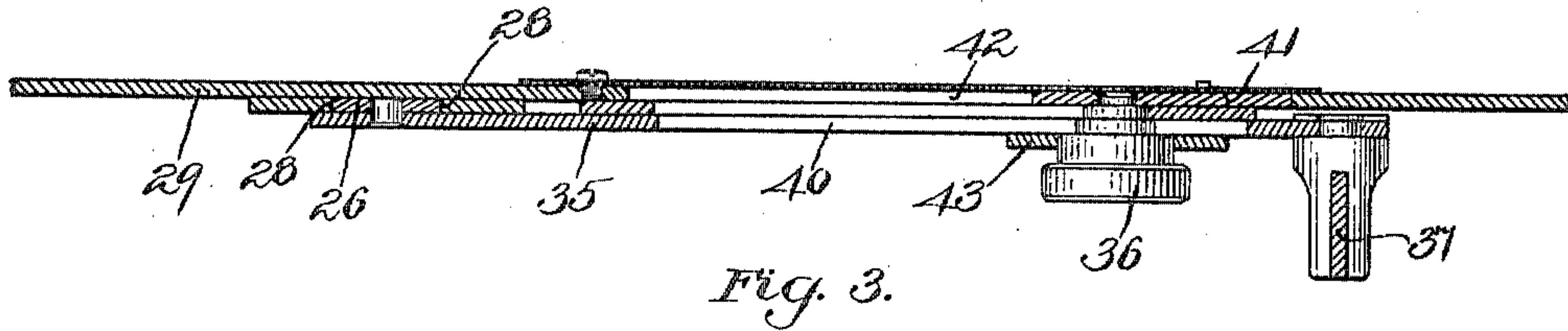


Fig. 3.

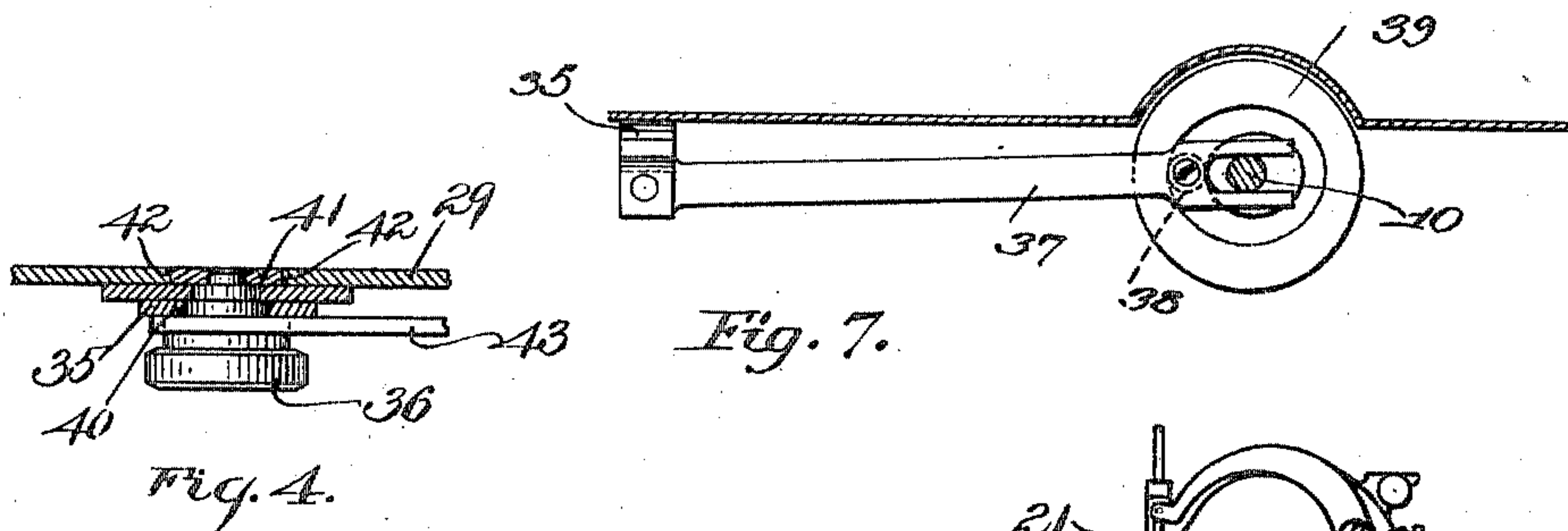


Fig. 7.

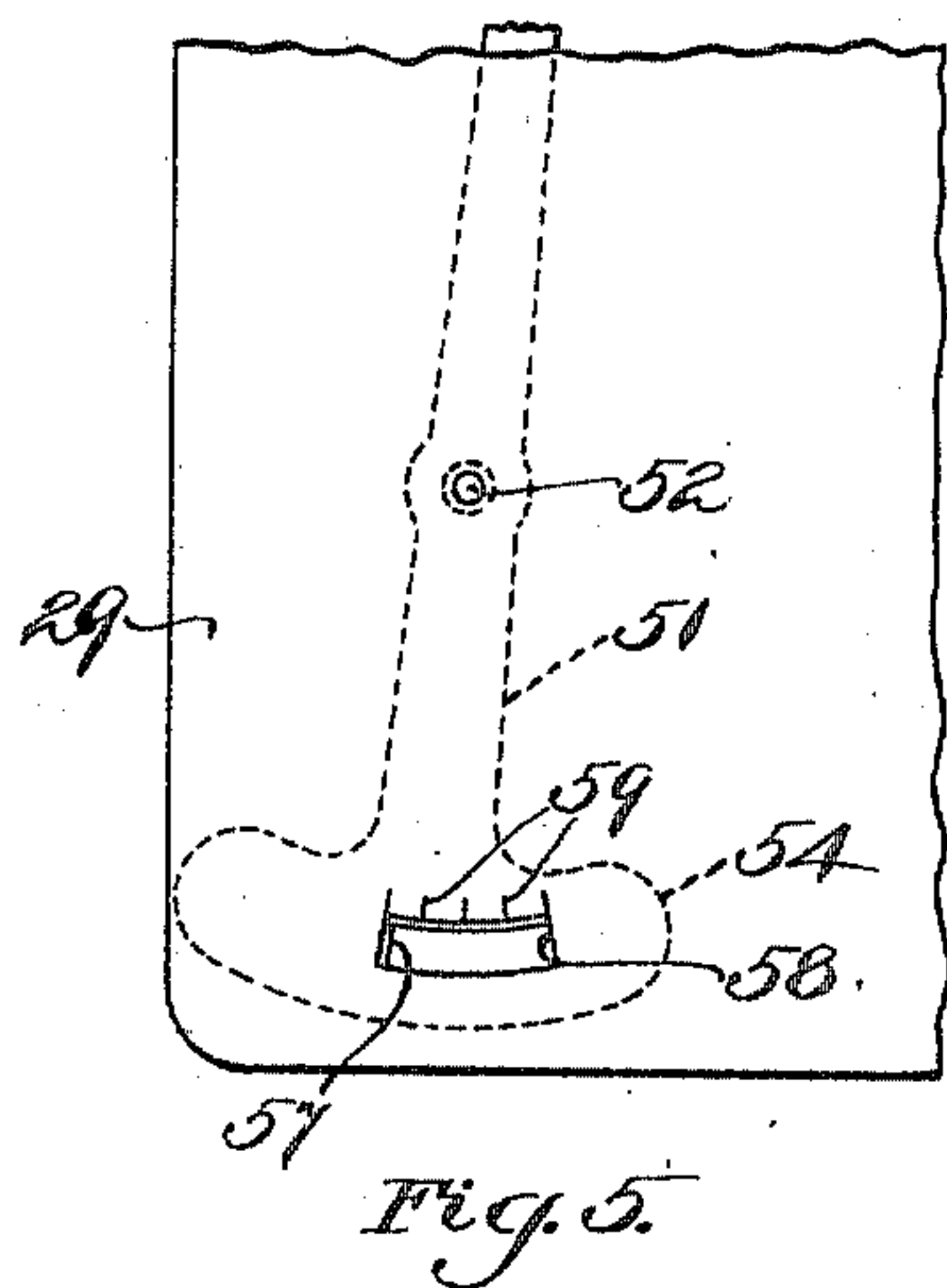


Fig. 5.

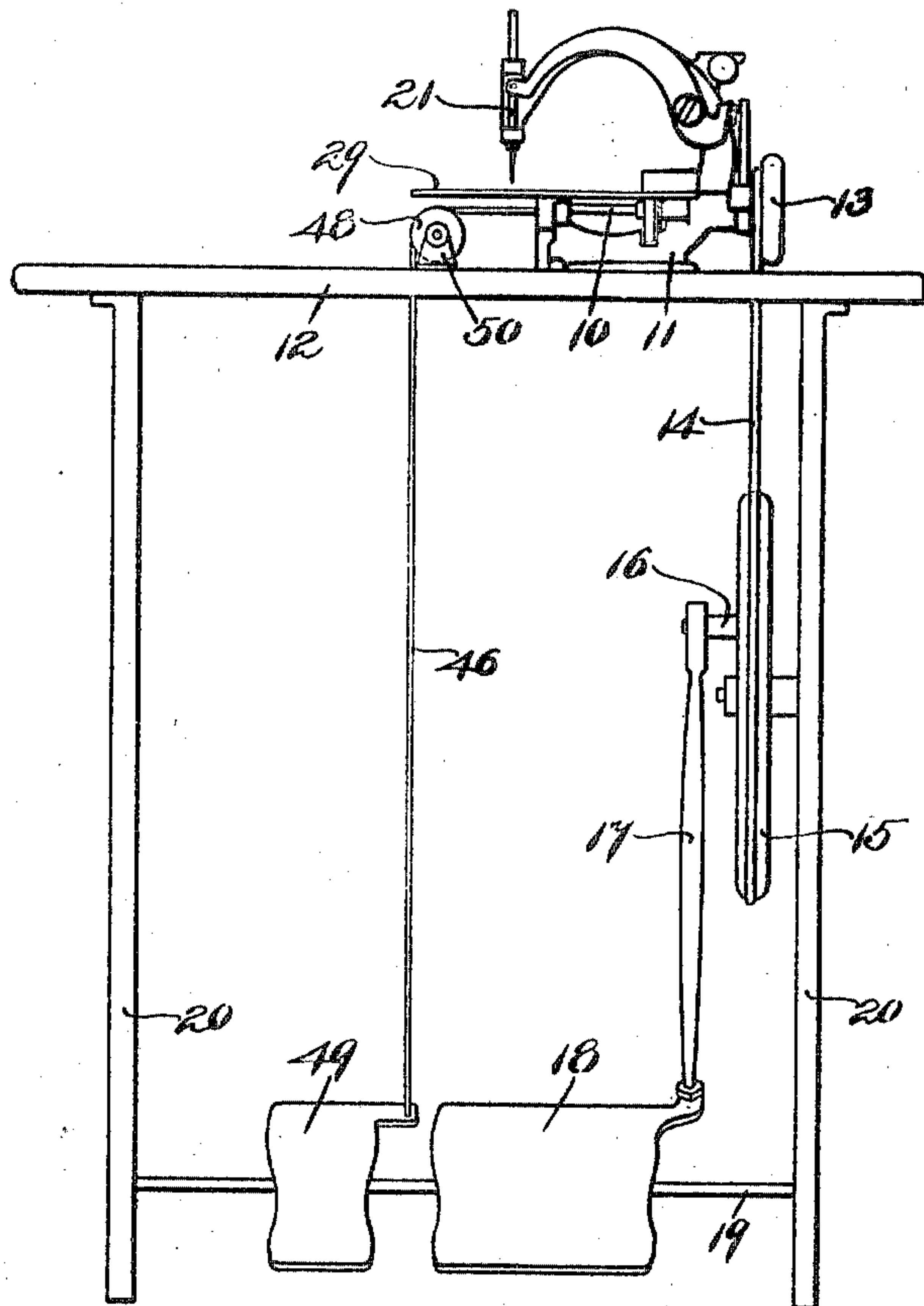


Fig. 6.

Witnesses:  
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William C. Glass.

Inventor:  
William Duchemin,  
by his attorney, *Charles S. Fording.*



# UNITED STATES PATENT OFFICE.

WILLIAM DUCHEMIN, OF SOMERVILLE, MASSACHUSETTS.

## SEWING-MACHINE FEED.

No. 817,304.

Specification of Letters Patent.

Patented April 10, 1906.

Application filed April 22, 1905. Serial No. 256,894.

*To all whom it may concern:*

Be it known that I, WILLIAM DUCHEMIN, a subject of King Edward VII, residing at Somerville, in the county of Middlesex and State of Massachusetts, have invented new and useful Improvements in Sewing-Machine Feeds, of which the following is a specification.

This invention relates to an improved feed for sewing-machines whereby the length of the feeding movement of the fabric, and hence of the stitch, may be regulated to any desired extent during the operation of the machine or when the machine is not in operation.

The object of the invention is therefore to provide a convenient and easily-operated mechanism whereby the length of the feeding movement in a sewing-machine may be conveniently changed from a long to a short movement, thus correspondingly varying the length of the stitch; and, further, it is the object of this invention to provide a mechanism of the character hereinbefore set forth in which the length of the feeding movement and of the stitch may be conveniently indicated to the operator of the machine by an index, so that the operator may set the length of feed and the corresponding length of stitch by said index during the operation of the machine or when the machine is not in operation and after having set the length of the feeding movement and stitch to lock said mechanism so that the feed cannot be changed accidentally.

The invention consists in the combination and arrangement of parts set forth in the following specification and particularly pointed out in the claims thereof.

Referring to the drawings, Figure 1 is a front elevation of a sewing-machine of a well-known type with my improved feed-adjusting mechanism attached thereto. Fig. 2 is an underneath plan of the same. Fig. 3 is an enlarged section taken on line 3 3 of Fig. 2 as viewed from the front of the machine when in the position illustrated in Fig. 1. Fig. 4 is a section taken on line 4 4 of Fig. 2. Fig. 5 is a detail plan of a portion of the work-plate, showing the index by means of which the length of feeding movement and of stitch is indicated. Fig. 6 is a front elevation similar to Fig. 1, illustrating a sewing-machine and the stand and treadle by which it is operated as well as the treadle for operating my improved feed-regulating mechanism. Fig. 7 is a detail section taken on line 7 7 of Fig. 2, looking toward the left in said figure.

Like numerals refer to like parts throughout the several views of the drawings.

I have illustrated my improved feed-regulating mechanism as attached to a sewing-machine of a well-known type for forming the chain-stitch; but the particular kind of sewing-machine to which my improved feed-regulating mechanism is attached forms no essential part of this invention, and therefore no detailed description of said sewing-machine is necessary other than to state in general that in the drawings 10 is the main shaft journaled to rotate in bearings formed in a frame 11, fast to a table 12, said shaft being driven by a pulley 13, fast thereto and connected by a belt 14, to which motion is imparted by a pulley 15, rotated by a crank 16, link 17, and treadle 18, said treadle 18 being pivoted to a rod 19, which serves as a stay-rod, joining together the side frames 20, to the upper ends of which the table 12 is fastened.

The stitch-forming mechanism consists of a needle-bar 21 and needle 22, attached thereto, and a rotary hook 23, fast to the shaft 10, all of these parts and the operation thereof being old and well known to those skilled in the art.

A presser-foot 24, fast to a presser-foot bar 25, is held downwardly against the upper surface of the feed-slide 26 by a spiral spring (not shown in the drawings) in the usual manner in machines of this class. The feed-slide 26 is arranged to slide longitudinally in ways 28; formed upon the under side of the work-plate 29, and is moved upwardly by a roll 30, journaled upon an arm 31, pivoted to the frame 11. Said arm is moved upwardly by a cam 32, fast to the main shaft 10. The downward motion necessary to complete the four-motion movement of the feed-slide 26 is obtained by the pressure of the spring 26' upon the upper side of said feed-slide. The feed-slide 26 extends rearwardly from the roll 30 above a hub 33, formed upon the arm 31 and pivoted to the stud 34, constituting the pivot of the arm 31. A reciprocatory motion is imparted to the slide 26 by a lever 35, pivoted to an adjustable stud 36, said lever being rocked on said pivot by a cam-slide 37, one end pivotally attached to the lever 35, the opposite end bifurcated to straddle the main shaft 10 and having a cam-roll 38 journaled thereon and projecting into a cam-groove formed in a cam 39, fast to the main shaft 10. The stud 36 projects through a



slot 40, provided in the lever 35 and extending longitudinally thereof, said stud being fastened to a slide 41, arranged to slide in ways 42 and at an angle to the slot 40, formed in the lever 35. The stud 36 is moved longitudinally of said ways, together with the slide 41, by a lever 43, pivoted at 44 to the work-plate 29 and forked at its outer end to engage the stud 36. A spring 45 holds the lever 43 in the position illustrated in Fig. 2, with the stud 36 and the slide 41, to which it is attached, at the extreme right-hand end of their movement. The lever 43, together with the stud 36 and slide 41, is moved toward the left, Fig. 2, by a belt 46, pivotally connected at 47 to said lever 43, and thence extending over a guide-pulley 48 downwardly to connect with a treadle 49. The pulley 48 is rotatably supported upon a bracket 50, fast to the table 12, and the treadle 49 is pivoted to rock upon the rod 19, adjacent to the treadle 18.

In order to lock the mechanism for adjusting the length of feed, hereinbefore described, in a fixed position after the same has been set to move said feed the required distance, an index-lever 51 is provided, pivoted at 52 to the work-plate 29 and connected by a link 53 to the lever 43, so that any motion of said lever 43 is communicated through said link 53 to the lever 51. The lever 51 is provided at one end thereof with a segmental plate 54, and beneath said plate is located a clamp-screw 55, having screw-threaded engagement with a bracket 56, fast to the work-plate 29. The upper end of the screw 55 bears against the lower face of the segmental portion 54 of the lever 51 and clamps said lever against the under side of the work-plate 29. Upon the upper face of the segmental plate 54 is provided an indicator 57, which may be observed through a slot 58, formed in the work-plate 29, and upon one edge of said slot are marked index-lines 59.

The thread 60 is led from the spool 61 through a tension device, through suitable guides, and through a thread-eye 62, formed in a take-up arm 63, to the needle 22. The take-up arm is pivoted at 64 to a bracket 65, fast to the frame of the machine, and is actuated by a pin 66, fast to the needle-bar 21 and extending rearwardly therefrom to engage a flat spring 67, which rides against the upper side of said pin and is fastened to the take-up arm 63.

The general operation of my improved mechanism for adjusting the length of throw of the feeding mechanism of a sewing-machine is as follows: The sewing operation is the same as in many different classes of sewing-machines well known to those skilled in the art, and therefore no detailed description of said operation is necessary. Assuming the parts to be in the position illustrated in Figs. 1 and 2, it will be seen that the feed-

slide will be moved to its greatest extent, for the reason that the pivotal stud 36 of the lever 35 is at its greatest distance therefrom and at its nearest distance to the point at which said lever 35 is connected to the actuating-slide 37. If now the operator desires to shorten the stitch by moving the fulcrum of the lever 35 toward the left, Fig. 2, he depresses the treadle 49, and thus moves the lever 43 toward the left, Figs. 1 and 2, with the belt 46, and as said fulcrum is thus moved toward the left, the slot 40 being at an angle to the ways 42, said lever will be moved toward the front of the machine from its backward position and the throw upon said lever will be less at the end where it is pivotally attached to the feed-slide. Therefore the feed of said slide will be less and the length of stitch will be correspondingly shortened.

It will be noted that on account of the angle at which the median line of the slot 40 is arranged with relation to the median line of the slot between the ways 42, while the length of motion imparted to the feed-slide is increased or diminished according to the position of the fulcrum-stud 36, the point to which said feed-slide feeds at its extreme forward movement remains the same, and any differences in the length of movement of the slide are taken from its rearward motion—that is, said slide always feeds forward to the same point, but starts to feed forward at different points, according to the position of the fulcrum-stud 36.

The advantage derived from my improved mechanism by which the feed in a sewing-machine may be regulated is as follows: Assuming the feed to be attached to a sewing-machine, as hereinbefore described, for the purpose of ordinary sewing or for basting and assuming that it is desired to do some basting, the operator starts the machine sewing with a fine stitch, at which time the treadle is depressed to give a short throw to the feed. After taking a few stitches the operator releases the treadle, thus changing the position of the fulcrum-stud and getting a long throw on the feed and a long basting-stitch. If during the sewing operation the operator rounds a curved portion of the material, then a shorter stitch becomes necessary, and this the operator again secures while the machine is in operation at full speed by depressing the auxiliary treadle, and finally near the end of the stitching operation the operator requiring a few short stitches to finish the work and also to prevent raveling in a chain or lock stitch machine depresses the treadle, thus shortening the feed and obtaining short stitches at the end of the work and securing the same against raveling. All of this work, it will be noted, can be done while the machine is in operation. It will further be understood that if it is desired at any time to operate the machine for a continuous pe-



riod with a certain length of stitch the same can be accomplished by locking the segmental lever to the work-plate, as hereinbefore described.

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

10 1. In a sewing-machine, a reciprocatory feed-slide, a stud, a lever connected to said slide and pivoted upon said stud, mechanism to rock said lever upon said stud, said stud adjustable longitudinally of said lever, a treadle, and means connecting said treadle to said adjustable stud, whereby different  
15 lengths of movement are imparted to said feed-slide.

20 2. In a sewing-machine a reciprocatory feed-slide, a lever connected to said feed-slide, mechanism to rock said lever, a stud to which said lever is pivoted projecting through a slot extending longitudinally of said lever, ways formed in a stationary portion of said machine extending at an angle to said slot, a slide movable longitudinally of said ways,  
25 said stud fast to said slide, and mechanism to move said last-named slide in said ways.

30 3. In a sewing-machine, a reciprocatory feed-slide, a lever connected to said feed-slide, mechanism to rock said lever, a stud to which said lever is pivoted projecting through a slot extending longitudinally of said lever, ways formed in a stationary portion of said machine extending at an angle to said slot, a slide movable longitudinally of said ways,  
35 said stud fast to said slide, mechanism to

move said last-named slide in said ways, and means to lock said stud in a stationary position.

4. In a sewing-machine, a reciprocatory feed-slide, a lever connected to said feed-slide, 40 mechanism to rock said lever, a stud to which said lever is pivoted projecting through a slot extending longitudinally of said lever, ways formed in a stationary portion of said machine extending at an angle to said slot, a  
45 slide movable longitudinally of said ways, said stud fast to said last-named slide, and a treadle connected to said stud.

5. In a sewing-machine a reciprocatory feed-slide, a work-plate, a lever connected to 50 said feed-slide, mechanism to rock said lever, a stud to which said lever is pivoted projecting through a slot extending longitudinally of said lever, ways formed in a stationary portion of said machine extending at an angle to  
55 said slide, a slide movable longitudinally of said ways, said stud fast to said slide, mechanism to move said last-named slide in said ways, an index-lever operated by said last-named mechanism, said work-plate provided  
60 with a slot through which an index-line upon said index-lever may be observed.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

WILLIAM DUCHEMIN.

Witnesses:

CHARLES S. GOODING,  
ANNIE J. DAILEY.