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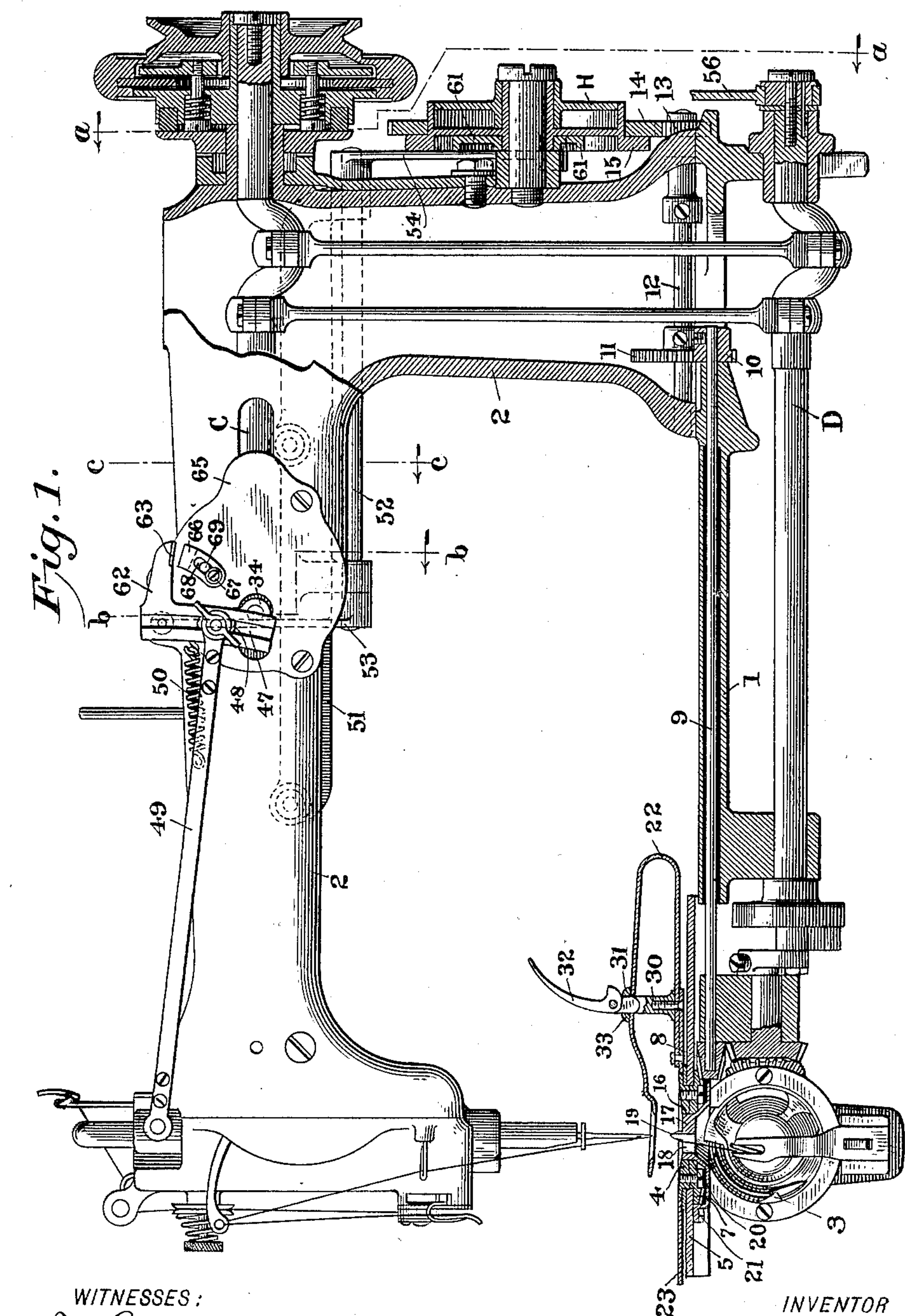
Patented Aug. 5, 1902.

**D. NOBLE.**  
**EYELET SEWING MACHINE.**

(Application filed Apr. 4, 1900.)

(No Model.)

4 Sheets—Sheet 1.



WITNESSES :

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No. 706,253.

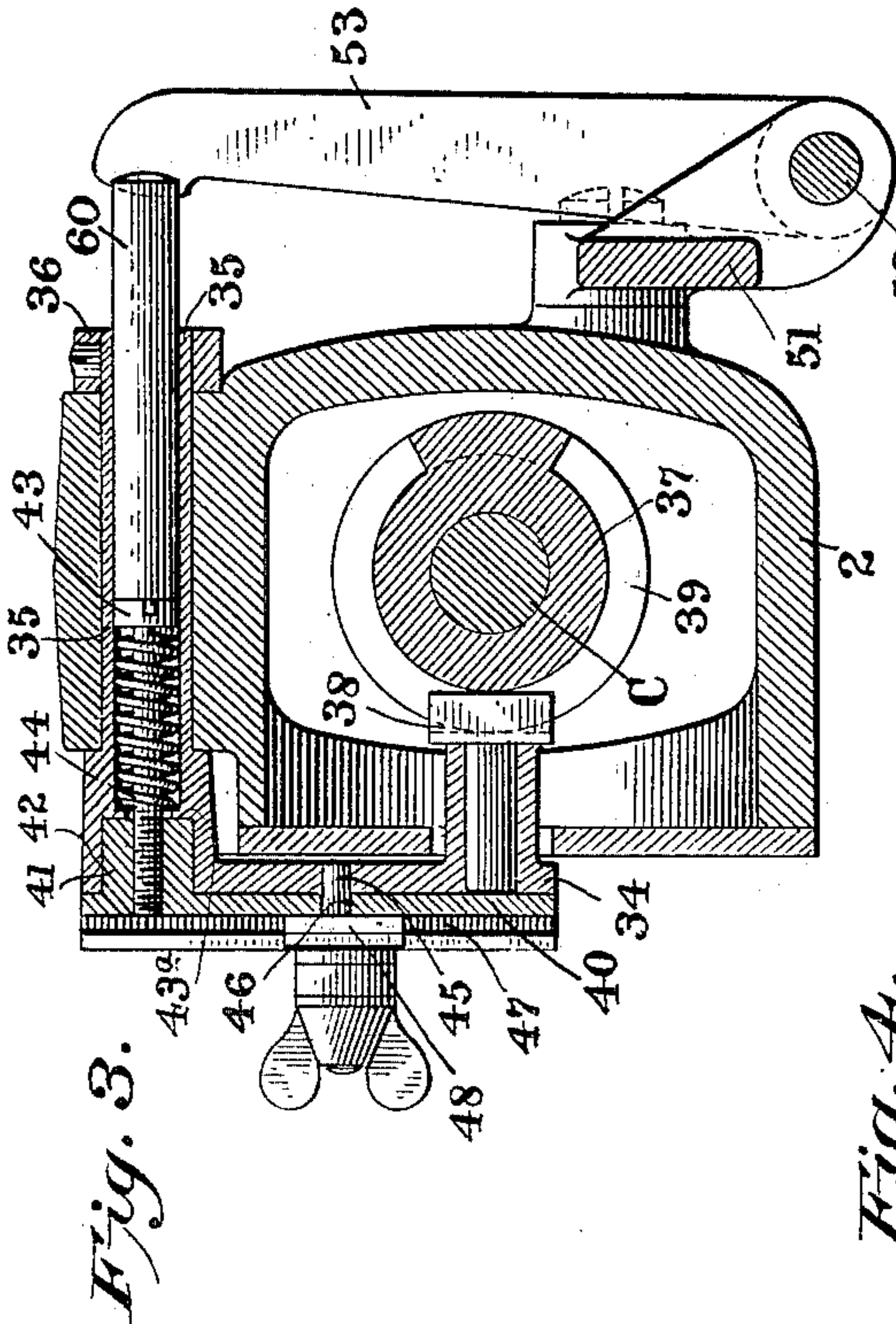
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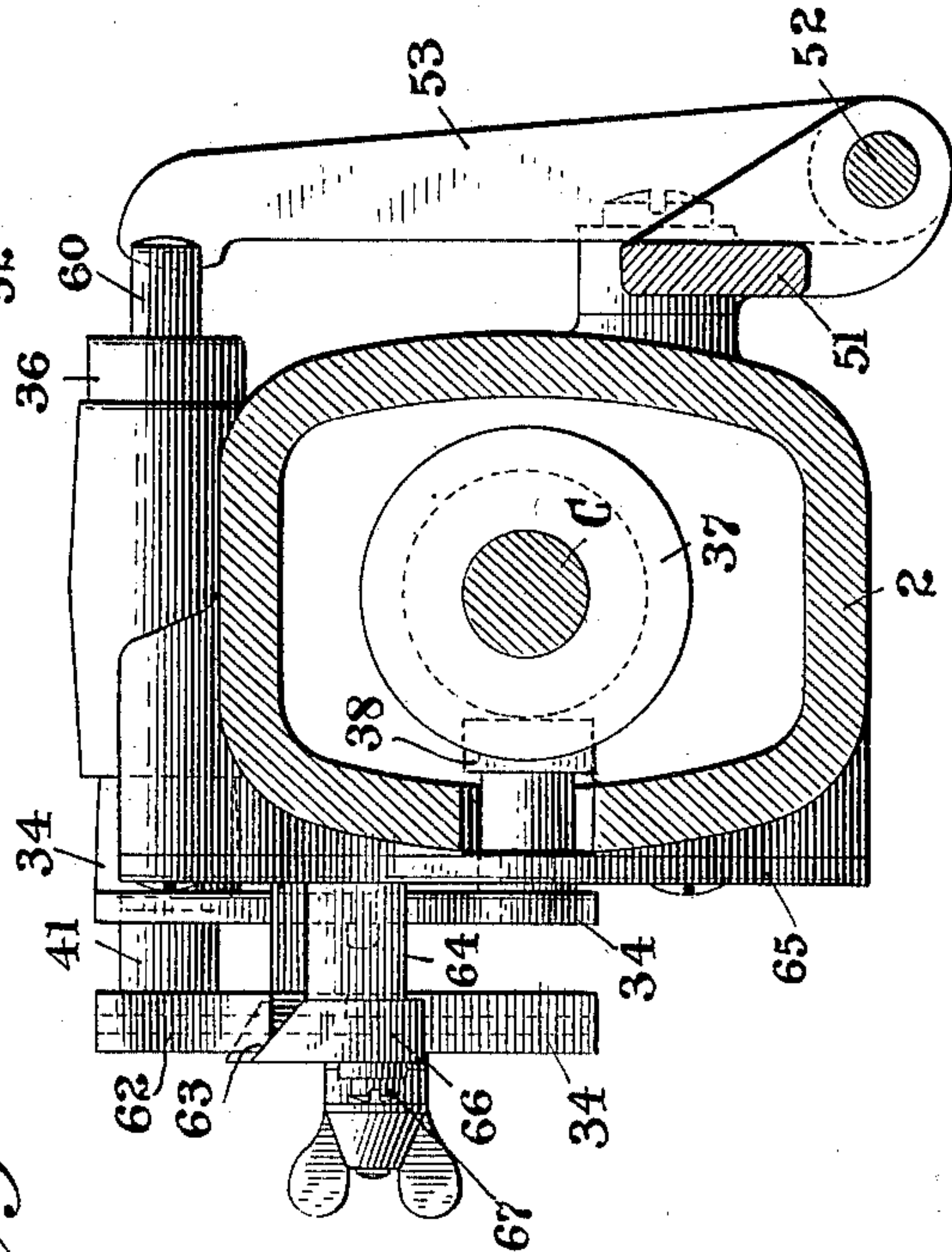
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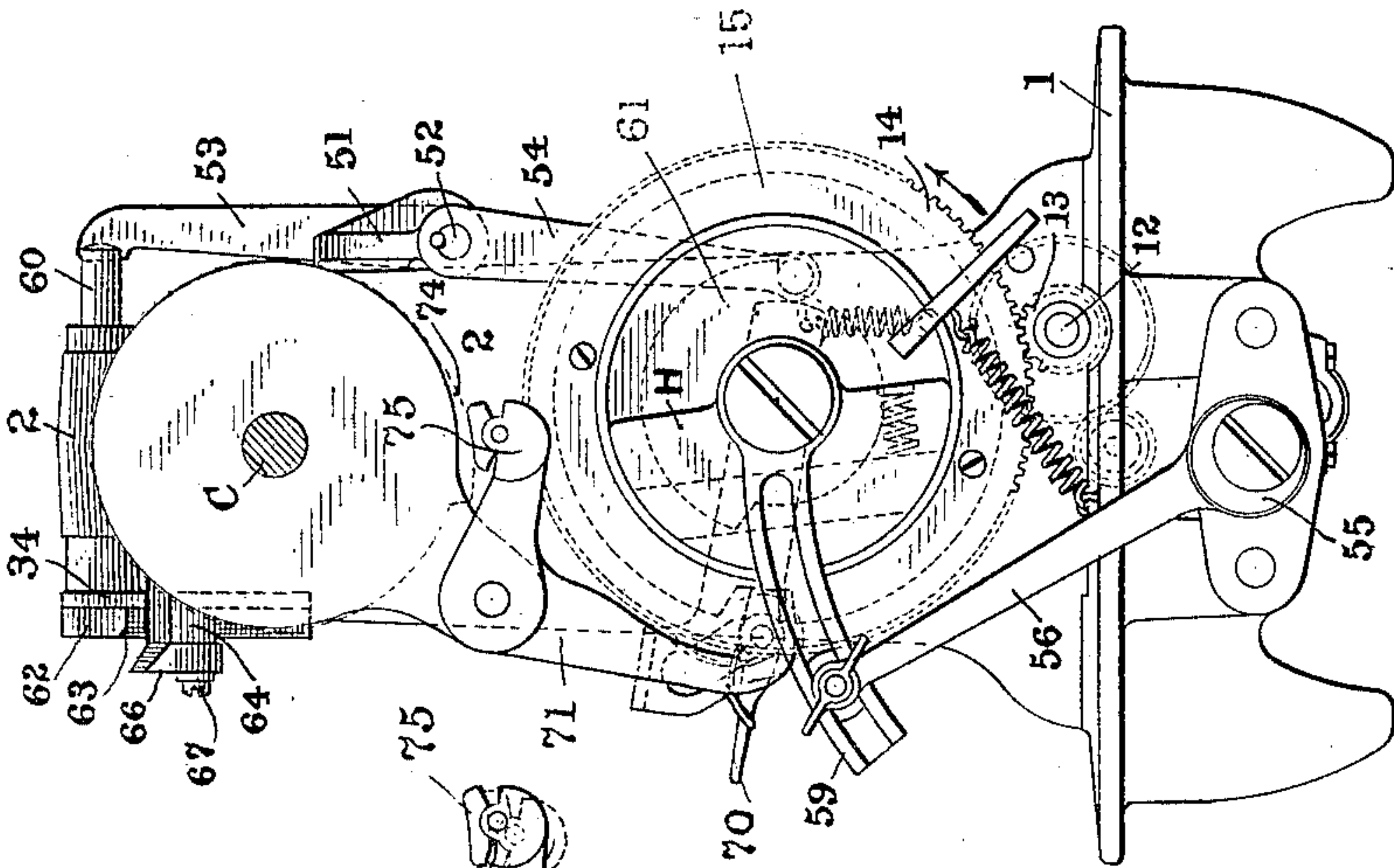
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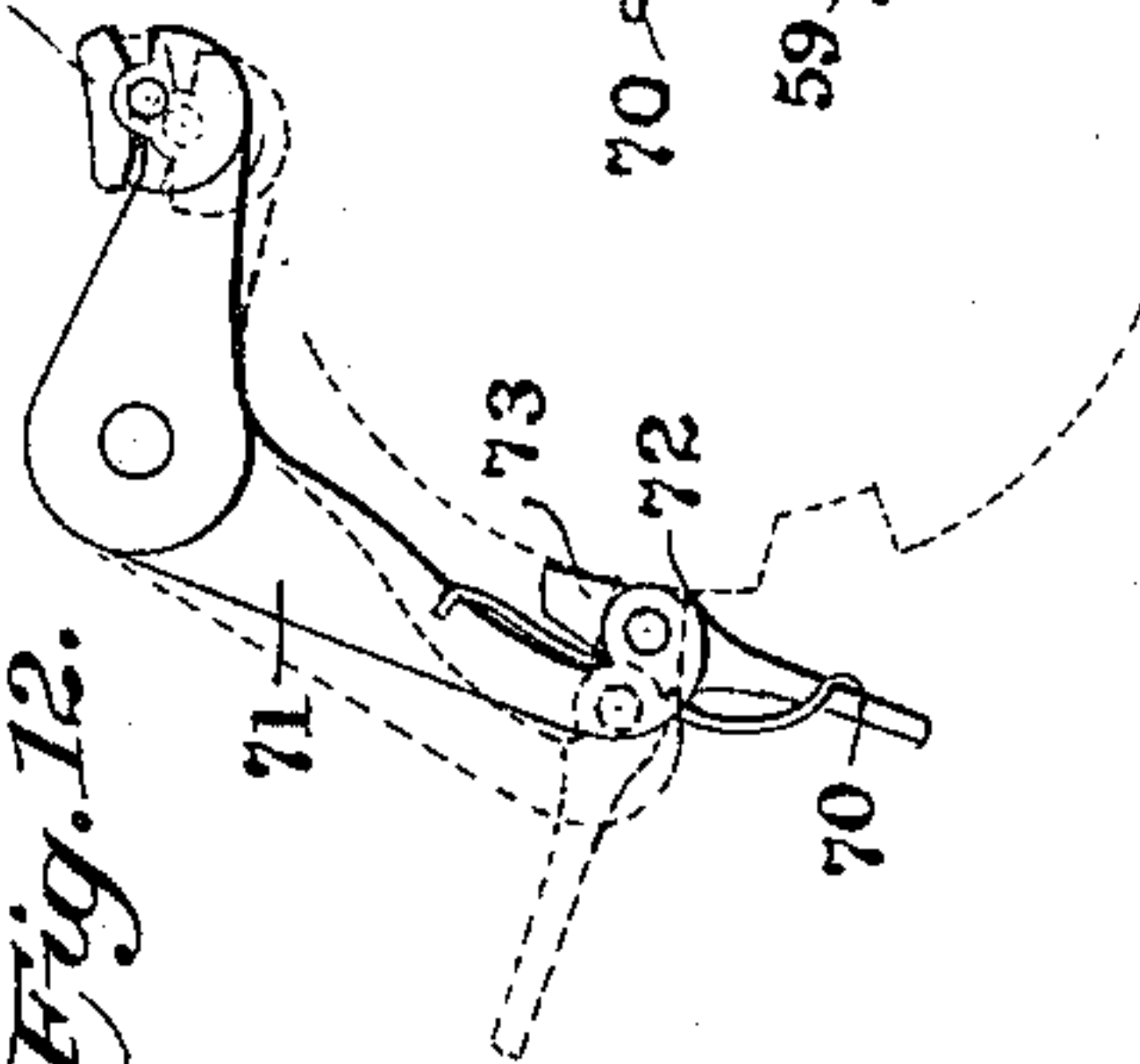
*Fig. 4.*



*Fig. 2.*



*Fig. 12.*



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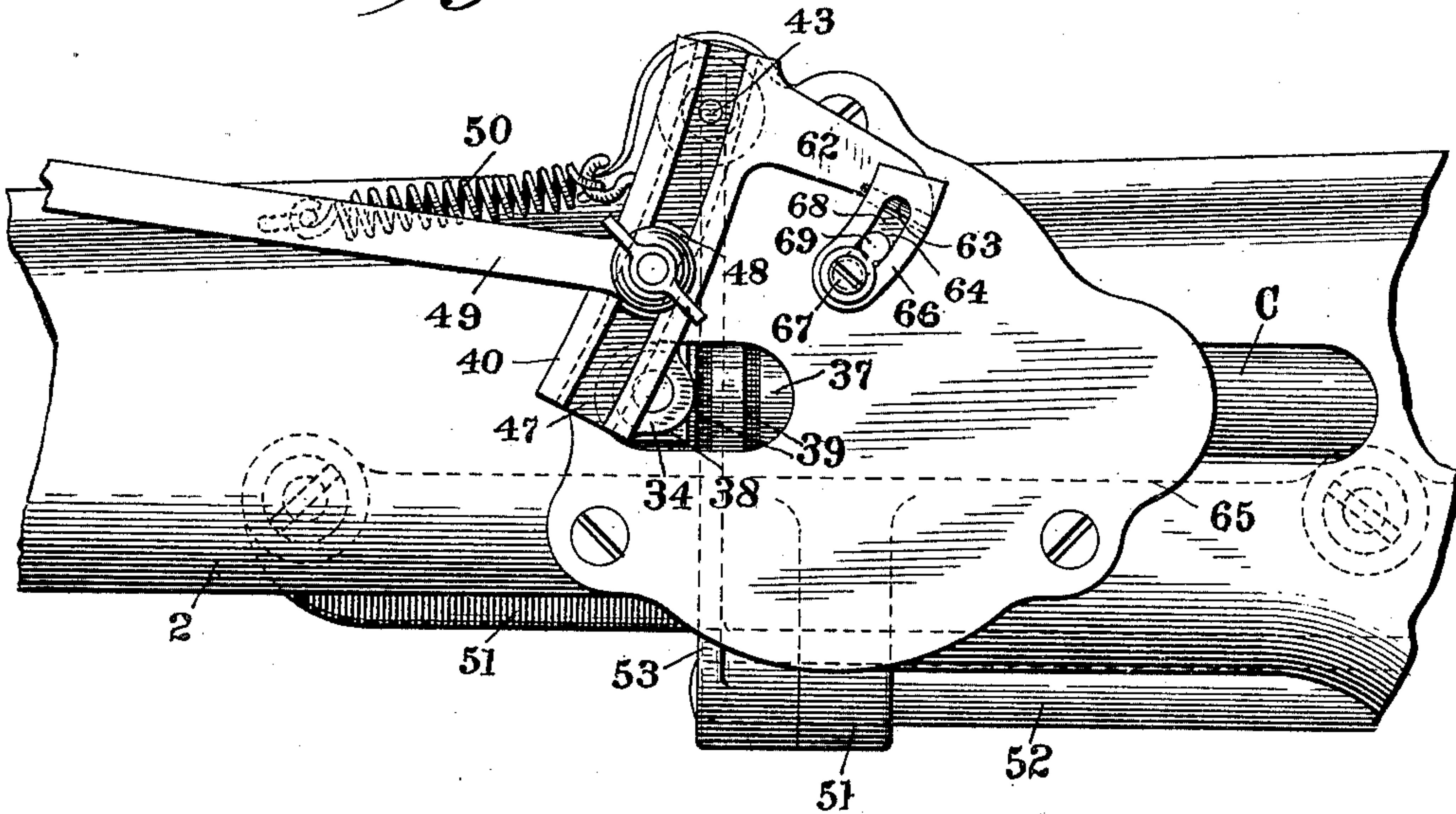
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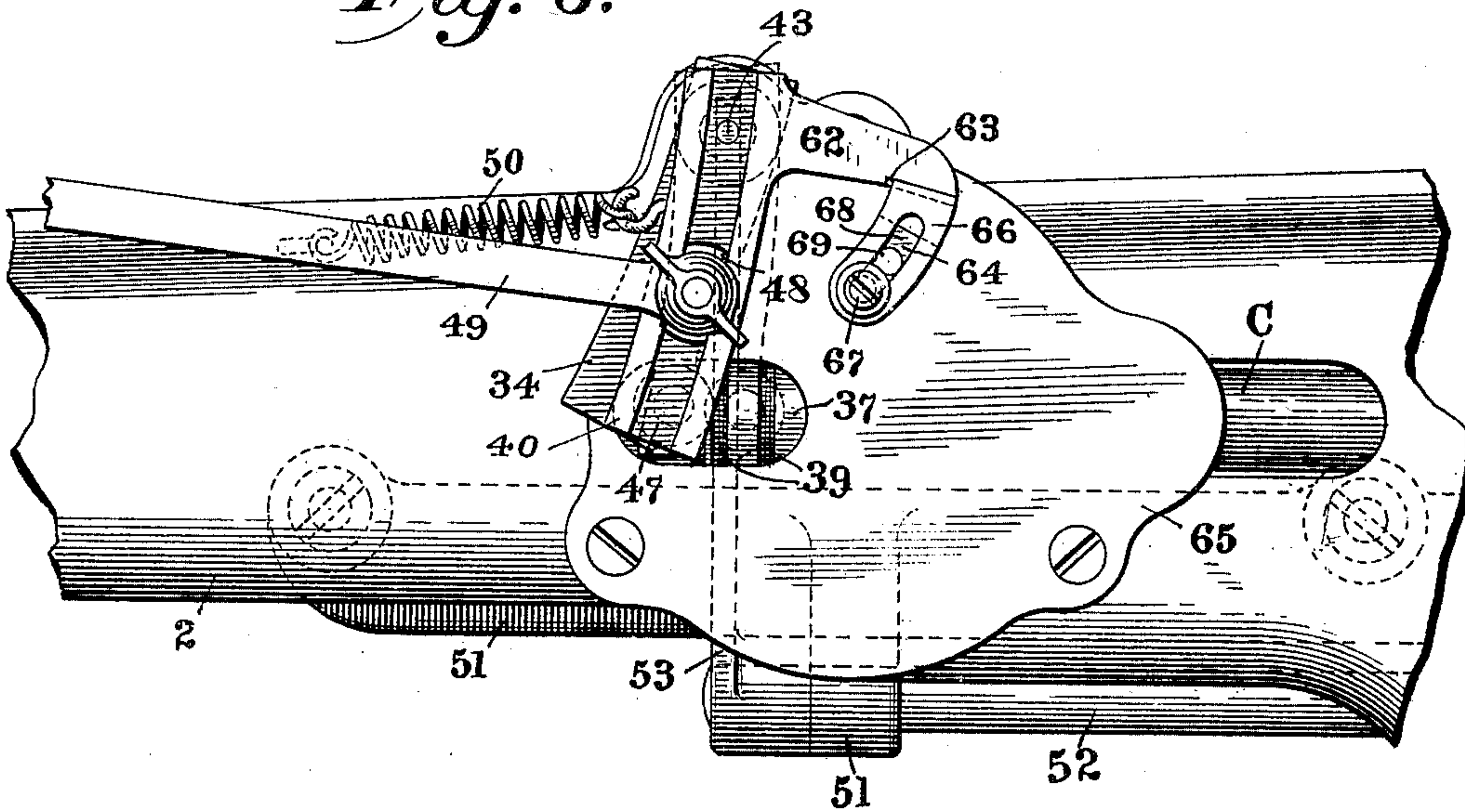
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*Fig. 5.*



*Fig. 6.*



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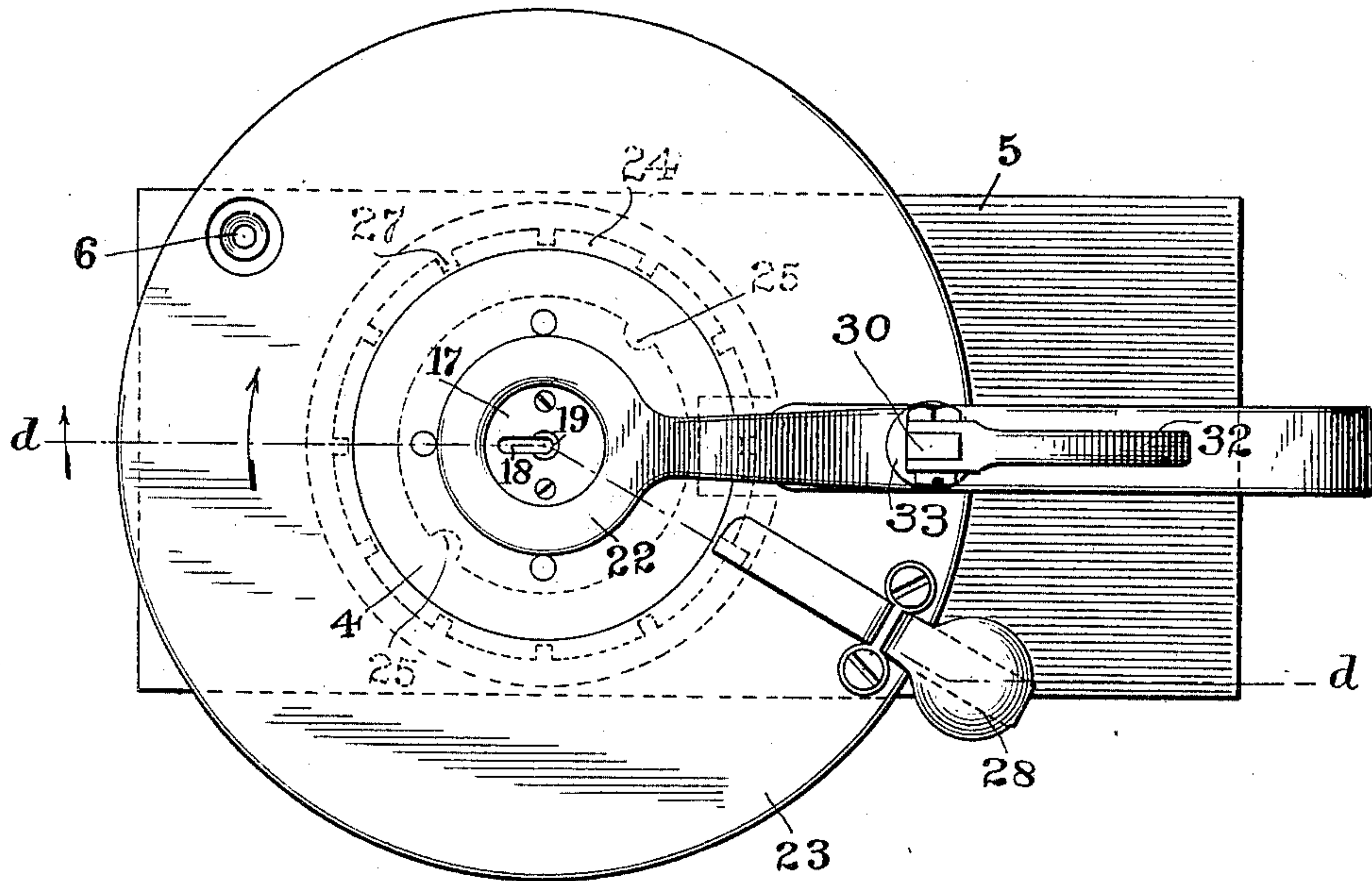
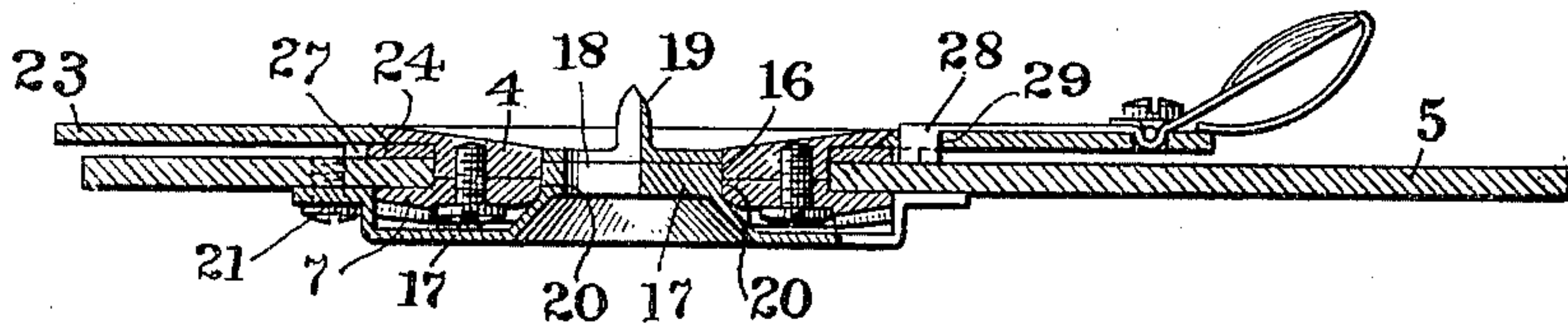
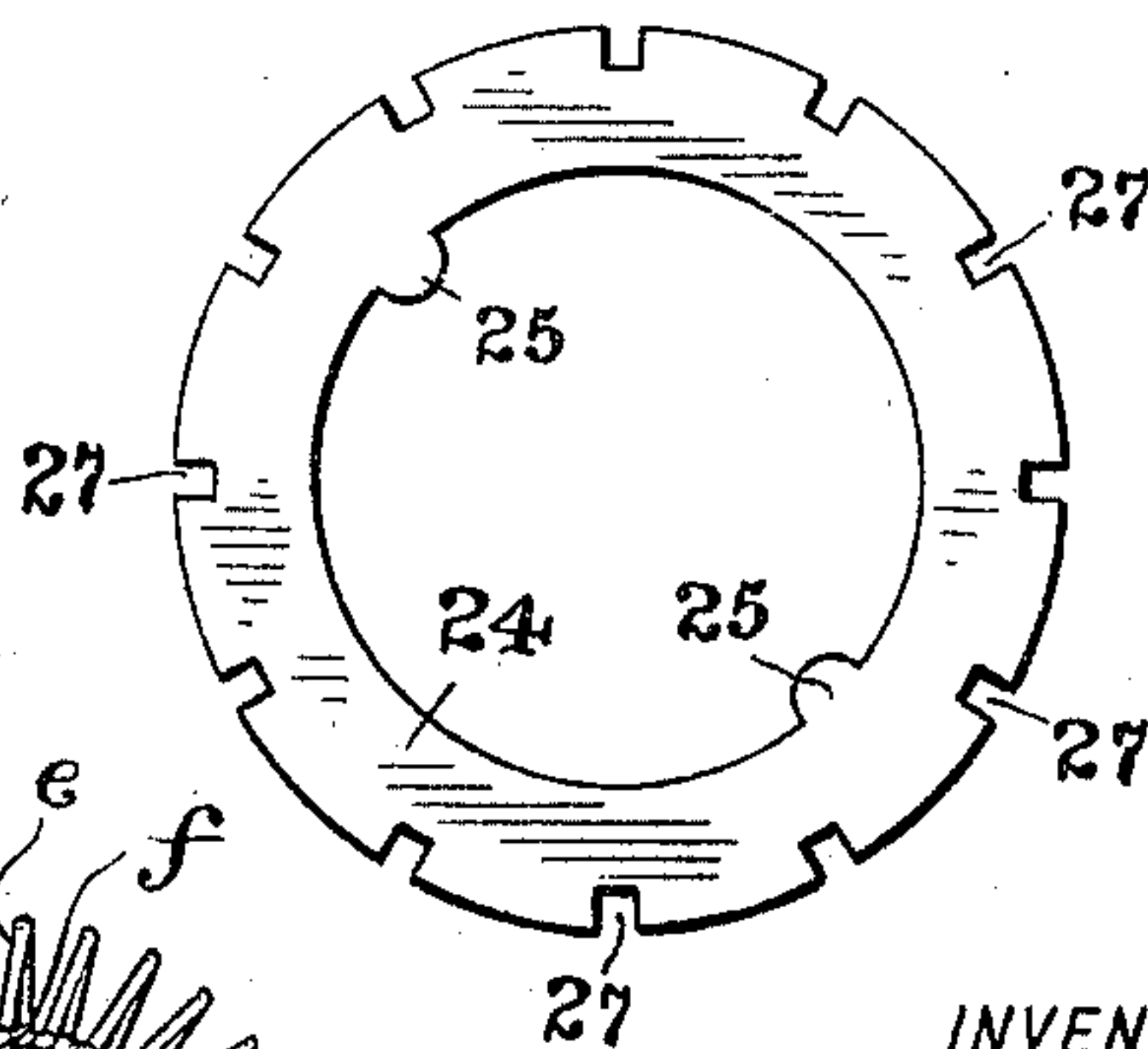
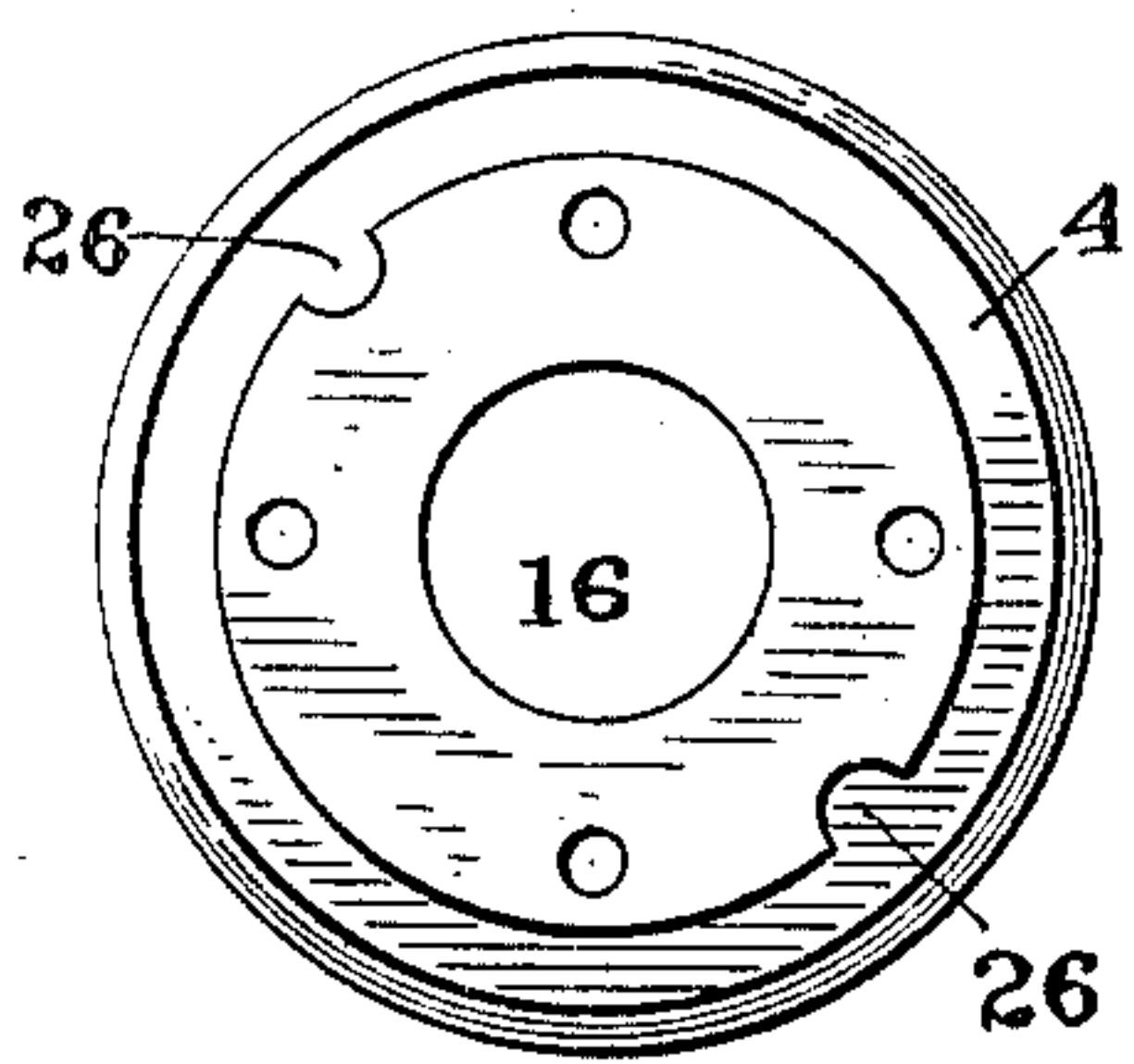
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D. NOBLE.  
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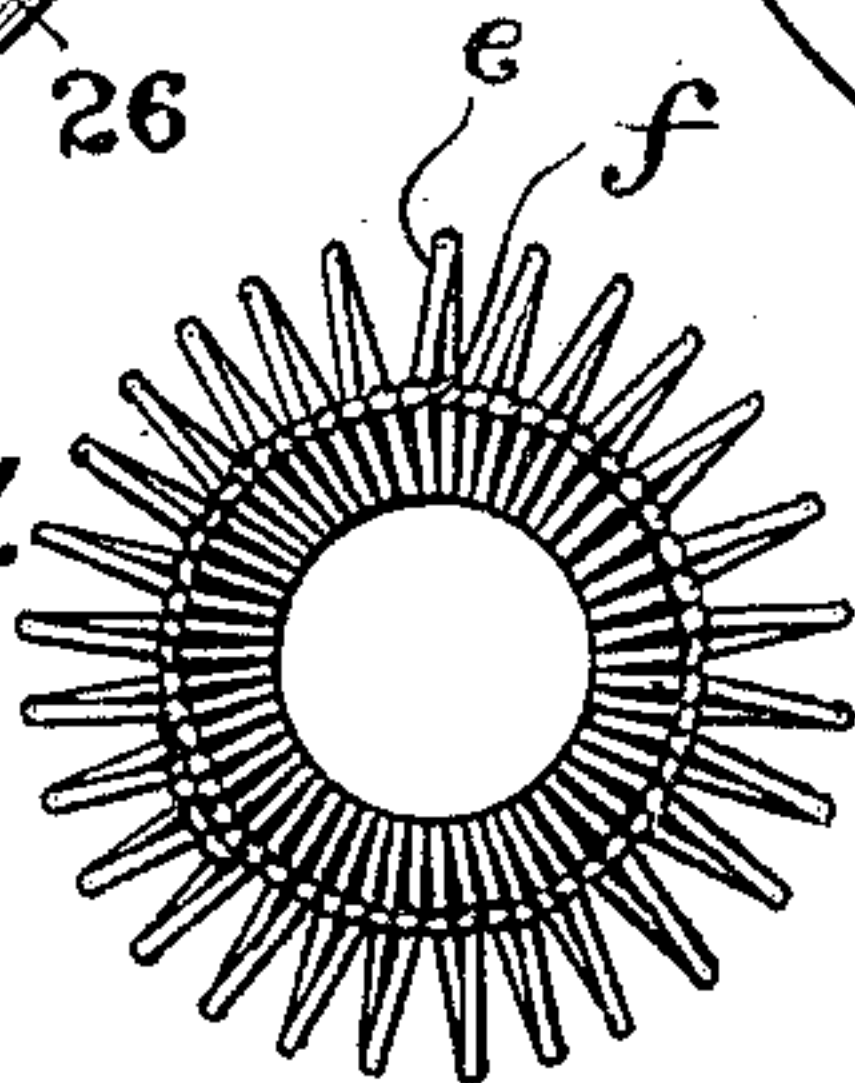
(No Model.)

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*Fig. 7.**Fig. 8.**Fig. 9.**Fig. 10.*

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*Fig. 11.*

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# UNITED STATES PATENT OFFICE.

DONALD NOBLE, OF FINSBURY, LONDON, ENGLAND, ASSIGNOR TO WHEELER & WILSON MANUFACTURING COMPANY, OF BRIDGEPORT, CONNECTICUT, A CORPORATION OF CONNECTICUT.

## EYELET-SEWING MACHINE.

SPECIFICATION forming part of Letters Patent No. 706,253, dated August 5, 1902.

Application filed April 4, 1900. Serial No. 11,495. (No model.)

*To all whom it may concern:*

Be it known that I, DONALD NOBLE, a subject of the Queen of Great Britain, residing at Finsbury, London, England, have invented a certain new and useful Improvement in Eyelet-Sewing Machines, of which the following is a full, clear, and exact description.

My invention relates to sewing-machines for working eyelets in cloth, leather, and other fabrics or material.

The object of my invention is to provide a machine of this description whose operation shall be automatic and which, in addition to overseaming the edges of the eyelet-perforation, will secure, tie, or anchor the overseam or binding stitches by an additional line of plain stitches laid upon and intersecting said overseam-stitches.

The invention consists in a sewing-machine having a rotary feed mechanism and a stitch-forming mechanism which includes a reciprocating needle mounted in a swinging gate and given a vibratory movement, so as to lay a series of zigzag stitches radially around the eyelet-hole, and which vibratory movement is automatically arrested at any predetermined point between the eyelet-hole and the outer end of the radial stitches, the feed of the material and the reciprocation of the needle continuing, and thereby a circle of stitches laid around the eyelet-hole amid and binding down the radial stitches.

In the accompanying drawings, illustrating my invention, in the several figures of which like parts are similarly designated, Figure 1 is a front elevation, partly in section, of the well-known Wheeler & Wilson sewing-machine equipped with my improvements. Fig. 2 is a section taken in the plane of the line *a a* of Fig. 1. Fig. 3 is a section taken in the plane of the line *b b* of Fig. 1. Fig. 4 is a section taken in the plane of the line *c c* of Fig. 1. Figs. 5 and 6 are front elevations, partly broken away, of the needle-shifting mechanism, illustrating different positions thereof. Fig. 7 is a plan view of the cloth-turning table and parts associated therewith. Fig. 8 is a section taken in the plane of the line *d d* of Fig. 7, the cloth-clamp being omitted.

Figs. 9 and 10 are detail bottom views of two of the members of the cloth-turning table. Fig. 11 is an enlarged plan view of an eyelet as made upon my machine, and Fig. 12 is a detail elevation of the brake-lever used in connection with the stop-motion and counting mechanism whereby the movements of the machine are arrested.

The stop-motion device and the counting mechanism herein in part shown and which may be employed in this machine form the subjects of my Letters Patent Nos. 656,852 and 656,853, dated August 28, 1900, and therefore only such limited reference will be made to these parts as is deemed necessary to a proper understanding of my present invention. Also the stitch-forming mechanism employed may be and, so far as shown, is of the usual construction found in the well-known Wheeler & Wilson zigzag-machine, with the exception of the mechanism for zig-zagging or imparting a horizontal vibration to the needle-bar.

Referring particularly to Figs. 1, 7, and 8, 1 is the usual bed-plate of the machine, and 2 the arm mounted thereon. 3 is the usual loop-taker, and 4 a circular feed-disk journaled within a plate 5, immediately above said loop-taker. The feed-disk may or may not be roughened, as desired. The plate 5 is secured to the bed in any desirable manner, as by screws, one of the holes for which is shown at 6 in Fig. 7. 7 is a bevel-gear secured concentrically to the under side of the feed-disk 4, which meshes with a bevel-pinion 8, fast on the end of a horizontal shaft 9. The shaft 9 is suitably journaled within the bed-plate, and tight on the other end thereof is a pinion 10, which meshes with a gear-wheel 11, secured upon a horizontal counter-shaft 12, journaled within the base of the arm 2. Upon the outer extremity of the counter-shaft 12 is secured a pinion 13, which meshes with and is driven by a large gear-wheel 14, carried by the stopping-disk 15 of the counting mechanism. The stopping-disk 15 receives an intermittent rotation through the instrumentalities of clutch H, segment-lever 59, connected therewith, eccentric 55 on end of shaft



D, and connection 56 between said eccentric and segment-lever, as shown and described in my Patent No. 656,852, previously referred to. Thus it will be clear that the circular disk 4 receives its feed movements from the intermittent rotary movement of the stopping-disk 15 through an intermediate train of gearing, to wit: gears 7, 8, 10, 11, 13, and 14 and shafts 9 and 12.

- 10 The feed-disk 4 has a central circular opening 16, within which extends the circular throat-plate 17, provided with the usual needle-aperture 18 and a spur 19. The bevel-gear 7, secured to the underside of the feed-disk 4, has a central opening 20 to receive the circular throat-plate.

The throat-plate 17 incloses the bevel-gear 7 and is supported in position by means of screws 21, (only one shown,) tapped in the under side of the plate 5, Figs. 1 and 8.

- 22 is a cloth-clamp secured to and supported in position by a circular table or ring 23, which is journaled around the feed-disk 4 in such manner as to be capable of turning or swinging freely around said disk. The contiguous bearing-surfaces of the disk 4 and table 23 are beveled (see Fig. 8) to form an inverted conical bearing, which affords a convenient manner of securing said table in position.

24 is a washer interposed between the plate 5 and the under edges of both the table 23 and disk 4, and said washer is provided with integral keys 25, which register with complementary recesses 26, formed in said disk, as clearly shown in Figs. 9 and 10, so that said washer will be carried around by and partake of all the movements of said disk 4. The washer 24 is provided with notches 27, adapted to be engaged by a spring-latch 28, which projects through a perforation 29 in the table 23. When the latch 28 is in engagement with one of the notches 27, the turn-table 23 and feed-disk 4 will be locked together, and said turn-table and cloth-clamp mounted thereon will be moved positively with the feed-disk, so that no slipping between the latter and said cloth-clamp can occur; but when said latch is disengaged the clamp and turn-table may be moved to any desired position around the feed-disk, thereby enabling the operator to introduce and manipulate the material to be eyeleted with greater facility.

- 30 is a post, whose upper end passes through a perforation 31 in the clamp 22, and pivoted to the upper end of said post is a cam-lever 32, by means of which the clamp 22 is closed down against the material. 33 is a washer interposed between said cam-lever and cloth-clamp. The post 30 is rigid with the turn-table and will of course be carried around by the latter.

The specific feed mechanism herein set forth constitutes the subject of a division of this case, patented August 13, 1901, No. 680,664.

In operation the material is to be introduced beneath the cloth-clamp and over the spur 19 in such manner as to abut one edge of the material against the cloth clamp or post 30 and is clamped down, care being taken that the material rests against the proper side of the post or clamp, (in advance of said clamp with respect to the direction of the feed movement,) so that the clamp will tend to push said material around, should there develop a tendency for said material to slip, which condition is of course present to a greater degree when the machine is operated at a very high rate of speed. By placing the material beneath the cloth-clamp in the position indicated an additional safeguard is secured as against the slipping of the material during the operation of the machine, and a proper distribution of the number of stitches employed is insured.

The importance of preventing any slipping of the material during the feed of the latter will be understood when it is borne in mind that a predetermined number of stitches is used and that said stitches must be properly distributed around the eyelet or the result would be imperfect work by reason of a failure to complete the figure being stitched. I do not, however, wish to be confined to this particular construction of clamp, since any clamp or presser-foot so constructed as to prevent the material from slipping during the feeding thereof would answer the requirements equally well.

The proportions of the respective gears which constitute the train of gearing between the stopping-disk 15 and feed-disk 4 are such that the latter will be rotated about two and one-tenth revolutions, approximately, during one complete revolution of said stopping-disk 15, such fraction in excess of the two complete revolutions of said feed-disk representing the amount of overlapped stitches, or, in other words, stitches in excess of the number required to exactly complete the stitched figure. It has been found expedient to overlap at least one of the radial overseam-stitches and one or more of the plain stitches which anchor said radial stitches, and for this reason I have provided for a sufficient movement of the feed-disk to obtain such overlapping of the stitches.

Referring to Figs. 1; 2, 3, 4, 5, and 6, 34 is an oscillatory lever rigid on a hollow shaft 35, which is pivoted within the upper part of the arm 2. The shaft 35 is held as against longitudinal movement by a collar 36. 37 is a switch-cam of the usual form secured on the driving-shaft C, and 38 is a shoe or cam-follower pivoted to the lower end of the oscillatory lever 34 and adapted to engage the cam-grooves 39 of the switch-cam. The function of the switch-cam 37 is to oscillate the lever 34 in a direction toward and away from the needle-bar, the oscillations of said lever in the respective directions indicated occurring at alternate revolutions of said cam, as



is the case in the well-known form of zigzag-machine. 40 is a segment-lever pivoted at its upper end by means of a boss 41, extending within a recess 42, formed in the oscillatory lever 34, said boss and recess being concentric with the pivot of said oscillatory lever. 43 is a headed screw tapped within the center of the boss 41 on the segment-lever 40, and 44 is a coiled spring interposed between the head of said screw and an internal shoulder 43<sup>a</sup>, formed on said oscillatory lever 34, said screw and spring being housed within the hollow shaft 35. The spring 44 exerts a tendency to keep the segment-lever 40 pressed against the oscillatory lever 34. 45 is a stud rigid with the lever 34, and 46 is a hole in the lever 40, within which said stud projects when said levers are in engagement with each other, whereby they are locked together as against independent oscillatory movement, as shown in Figs. 3 and 5. 47 is an arcuate undercut groove cut within the segment-lever, and 48 is the usual adjustable slide-block, to which the usual needle-bar link connection 49 is pivoted in the ordinary manner to impart the requisite vibration to the needle for the zigzag stitch. The mechanism for effecting the vertical reciprocation of the needle-bar, together with the hinged gate, in which said needle-bar has its bearings and whereby the needle-bar may be zigzagged or horizontally vibrated, may be of the construction usual in the well-known Wheeler & Wilson zigzag-sewing machine. 50 is a coiled spring, one end of which is connected to the segment-lever 40, while the other end of said spring is connected to the arm 2, the tendency of said spring being to pull the segment-lever in a direction toward the needle-bar. 51 is a bracket secured to the rear side of the arm 2, and 52 is a rock-shaft journaled within said bracket. 53 and 54 are levers secured, respectively, upon the opposite ends of the rock-shaft 52, the lever 53 engaging a plunger 60, fitted within the hollow shaft 35 and bearing upon the head of screw 43, while the lever 54 is engaged by a cam 61, secured to the inner side of the stopping-disk 15, whereby said rock-shaft and levers are actuated. 62 is a finger extending from the segment-lever 40 and having a slightly-beveled nose 63. 64 is a stationary stop-block supported in position on the arm 2 in any desirable manner, as by being screwed to the usual arm-plate 65, and 66 is a beveled cam-plate adjustably secured to said stop-block by a headed screw 67. 68 is an arcuate slot, through which the screw 67 passes, formed in said cam-plate concentrically with the pivotal center of the segment-lever 40. A pin 69 from the block 64 also projects within the slot 68 and serves to steady and guide said cam-plate when the latter is being adjusted.

The spring 44, besides keeping the segment-lever pressed against the lever 34, also serves to return the plunger 60 and levers 53 and 54 to normal or retracted position, the

lever 54 being thereby kept in engagement with the cam 61. The contour of the cam 61 is such that these parts will remain in the retracted or normal position during approximately half a revolution of said cam, as shown in Figs. 2 and 3, and then moved by said cam to the position shown in Figs. 4 and 6, whereby the segment-lever 40 will be disengaged from the lever 34 and shifted to a predetermined stationary position. The disengagement of the segment-lever 40 from the oscillatory lever 34 is effected by the plunger 60 pushing upon the screw 43 (the latter being, in effect, an integral part of the segment-lever) against the resiliency of the spring 44. As soon as the segment-lever is moved by the plunger 60 far enough to be clear of the stud 45 the spring 50 will pull said segment-lever until the bevel-nose finger 62 thereon abuts against the stop-block 64, as shown in Fig. 5. This position of the segment-lever would leave the needle-bar in a position corresponding to the position the latter occupies when the oscillatory lever 34 is at the left hand or outward limit of its stroke and before said levers 34 and 40 are disconnected. The movement of the plunger 60, however, does not stop as soon as the segment-lever has been disconnected, but continues until the bevel-nose finger 62 is engaged by the beveled cam-plate 66. (Shown clearly in Fig. 4.) The effect of such engagement of said finger and cam-plate will be to slightly rotate the segment-lever on its pivotal center from the position shown in Fig. 5 to the position shown in Fig. 6, whereby the needle-bar will be shifted from its outer or left-hand position to a position intermediate of the two extreme limits of the zigzag movement or horizontal vibration of said needle-bar.

The extent of movement imparted to the segment-lever by the cam-plate 66 is governed by the position said plate occupies with respect to the bevel-nose finger, and as this cam-plate may be readily adjusted it will be understood that the stationary position of the needle-bar as regards horizontal vibration will be under complete control of the operator. In this position the segment-lever will be entirely disconnected (as regards any horizontal motion) from the oscillatory lever 34 and the latter will be free to oscillate independently of the former. The parts will remain in this position until the cam 61 by its continued rotation permits the spring 44 to return said parts to normal or retracted position. When the spring 44 effects the return of the parts to normal position, the stud 45 on the oscillatory lever 34 will of course enter the hole 46 in the segment-lever, and these levers will again be thereby locked together. The stopping-disk 15, to which the gear 14 and cam 61 are secured, controls both the movement of the feed-disk 4 and the needle-shifting mechanism, and, as previously described, one revolution of said stopping-disk will effect approximately two and one-tenth



revolutions of said feed-disk. Further, the cam 61, as described, is shaped and timed to effect the disconnection of the segment-lever with the oscillatory lever during the latter half of the rotation of said cam. It will therefore be understood that the needle-bar will be caused to zigzag or vibrate horizontally during the first revolution of the feed-disk 4, thereby encircling the eyelet with overseam-stitches, and that said needle-bar will be brought to a standstill (as regards horizontal vibration) during the succeeding movement of said feed-disk, thereby encircling the eyelet with a line of plain stitches. The mechanism for shifting the needle-bar being adjustable, as previously described, the line of plain stitches may be placed at any desired point intermediate of the outer ends of the overseam-stitches and the inner edge of the eyelet.

The overseamed eyelet presents the appearance of the hub and spokes of a wheel, each spoke consisting of two overseam-stitches. The feed-disk is actuated at each successive descent of the needle, and the length of feed movement of said feed-disk is precisely the same whether an overseam-stitch is being made or whether a plain stitch is being made. In other words, the distance that said feed-disk is advanced for each separate plain stitch is equal to the distance that said disk is advanced for each overseam-stitch. It will therefore be clear that the length of said plain stitches will be in direct proportion to the length of feed in making the overseam-stitches and that each separate one of the latter will be fastened down or anchored by a separate plain stitch, except at the overlapped beginning and termination of the stitched figure, as seen in Fig. 11, where several of the overseam-stitches will each be secured by two of said plain stitches, as heretofore referred to. In Fig. 11, *e* represents the radial or overseam stitches, and *f* the anchoring or plain stitches.

Although I prefer to use the form of stop-motion and counting mechanism herein referred to, still I do not wish to be confined to these devices, since any approved mechanisms for these purposes will answer the requirements of my invention, the gist of which resides in the broad idea of providing mechanism for encircling the eyelet with overseam radial stitches and then laying a line of plain anchoring or tying stitches also encircling the eyelet and intersecting said overseam radial stitches.

It is often necessary to stop the machine before the stopping-disk is in proper position for the stop-motion devices to operate, and for this purpose I have provided what I shall term an "emergency" stop-lever in addition to the usual brake-lever.

Referring to Figs. 2 and 12, 70 is a spring-actuated lever or dog pivoted to the lower end of the usual brake-lever 71. 72 is a shoulder or stop on the lever 71, whereby the down-

ward movement of the inner end or nose 73 of said lever is limited. The position shown in full lines in Fig. 12 is that which these parts occupy when the machine has been stopped, while the dotted lines in this view illustrate the position assumed by said parts when the machine is running. The effect of the lever 70 is to permit the brake-lever 71 to be operated at any time to stop or start the machine irrespective of the relative position or time of the counting-disk, and this is effected by simply interposing or withdrawing the upper end 75 of said brake-lever within or without the field of travel of the cam 74. (Shown in dotted lines in Fig. 2.) This emergency stop-lever constitutes the subject of a division of this case patented August 13, 1901, No. 680,665.

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

1. In an eyelet-sewing machine, the combination of stitch-forming mechanism including a reciprocating needle-bar, and means for feeding the material in a circular path, with mechanism for effecting a horizontal vibration of the needle-bar, and instrumentalities whereby said needle-bar may be brought to a standstill (as regards horizontal vibration) in a predetermined position intermediate of the limits of said horizontal vibration and its reciprocation continued, whereby a circular line of plain stitches will be made upon and intersecting the overseam-stitches previously made, as set forth.

2. In an eyelet-sewing machine, the combination of stitch-forming mechanism including a reciprocating needle-bar, mechanism for effecting a horizontal vibration of the needle-bar throughout a predetermined cycle of movement whereby overseam-stitches are made, instrumentalities for effecting a discontinuance of the horizontal vibration of said needle-bar whereby plain stitches are made upon and intersecting said overseam-stitches, and means for feeding the material, whereby each separate overseam-stitch will be anchored in place by a separate plain stitch, substantially as set forth.

3. In an eyelet-sewing machine, the combination of stitch-forming mechanism including a reciprocating needle, a cloth-clamp and means to carry around the material in a circular path, means to control the number of stitches to be made, means for horizontally vibrating the needle to permit the placing of a series of radial stitches, means for arresting such vibration at a predetermined point between the ends of the radial stitches and while the reciprocation of the needle continues and placing a circle of plain stitches over and amid the lengths of thread of the radial stitches, and connections between the stitch-controlling means and the mechanism for arresting the horizontal vibration, by which connections the said horizontal vibration may be automatically resumed, substantially as described.



4. In an eyelet-sewing machine, the combination of stitch-forming mechanism including a needle-bar, means for feeding the material, a lever pivoted to the arm of the machine, means for oscillating said lever, a segment-lever pivoted on said oscillatory lever, operative connections between said segment-lever and the needle-bar, and means for locking said oscillatory lever and segment-lever together, substantially as set forth.

5. In an eyelet-sewing machine, the combination of stitch-forming mechanism including a needle-bar, means for feeding the material, a lever pivoted to the arm of the machine, means for oscillating said lever, a segment-lever pivoted on said oscillatory lever, operative connections between said segment-lever and the needle-bar, means for locking said oscillatory lever and segment-lever together, and instrumentalities whereby said segment-lever may be disconnected from said oscillatory lever, substantially as set forth.

6. In an eyelet-sewing machine, the combination of stitch-forming mechanism including a needle-bar, means for feeding the material, an oscillatory lever pivoted to the arm of the machine, means for actuating said lever, a segment-lever pivoted on said oscillatory lever, operative connections between said segment-lever and the needle-bar, means for locking said oscillatory lever and segment-lever together, and instrumentalities whereby said segment-lever may be disconnected from said oscillatory lever and shifted to a predetermined stationary position, for the purpose set forth.

7. In an eyelet-sewing machine, the combination of stitch-forming mechanism including a needle-bar, means for feeding the material, an oscillatory lever pivoted to the arm of the machine, means for actuating said lever, the segment-lever pivoted on said oscillatory lever, operative connections between said segment-lever and the needle-bar, means for locking said oscillatory lever and segment-lever together, and instrumentalities whereby said segment-lever may be disconnected from said oscillatory lever and shifted to a predetermined stationary position intermediate of the two extreme limits of the oscillatory movement of said lever, for the purpose set forth.

8. In an eyelet-sewing machine, the combination of stitch-forming mechanism including a needle-bar, means for feeding the material, an oscillatory lever pivoted to the arm of the machine, means for actuating said lever, a segment-lever pivoted on said oscillatory lever, operative connections between said segment-lever and the needle-bar, means for locking said oscillatory lever and segment-lever together, instrumentalities whereby said segment-lever may be disconnected from said oscillatory lever, and a suitably-supported cam-plate against which said segment-lever is forced when disconnected from said oscillatory lever, for the purpose specified.

9. In an eyelet-sewing machine, the combination of stitch-forming mechanism including a needle-bar, means for feeding the material, an oscillatory lever pivoted to the arm of the machine, means for actuating said lever, a segment-lever pivoted on said oscillatory lever, operative connections between said segment-lever and the needle-bar, means for locking said oscillatory lever and segment-lever together, instrumentalities whereby said segment-lever may be disconnected from said oscillatory lever, a stationary stop-block against which said segment-lever may abut when disconnected from said oscillatory lever previous to assuming the desired position for placing the line of plain stitches, and an adjustable cam-plate, suitably supported, against which said lever is subsequently forced into complete position for placing the line of plain stitches.

10. In an eyelet-sewing machine, the combination of stitch-forming mechanism including a needle-bar, means for feeding the material, an oscillatory lever pivoted to the arm of the machine, means, as a switch-cam, for actuating said lever, a segment-lever pivoted concentrically with the pivotal center of said oscillatory lever, operative connections between said segment-lever and the needle-bar, a spring whereby said segment-lever is held against said oscillatory lever, means for locking said levers together against independent oscillatory movement, a plunger housed within the hollow pivot of said oscillatory lever and in operative contact with said segment-lever, means including a cam for governing the number of stitches to be made, and operative connections between said plunger and said cam, substantially as set forth.

11. In an eyelet-sewing machine, the combination of stitch-forming mechanism including a needle-bar, means for feeding the material, an oscillatory lever pivoted to the arm of the machine, means for actuating said lever, a segment-lever pivoted concentrically with the pivotal center of said oscillatory lever, means for locking said levers together, operative connections between said segment-lever and the needle-bar, a plunger housed within the hollow pivot of said oscillatory lever and in operative contact with said segment-lever, means for governing the number of stitches to be made, a cam carried by said stitch-governing mechanism, a rock-shaft, a lever on one end of said rock-shaft which bears against said plunger, and a lever on the opposite end of said rock-shaft adapted to be engaged by the said cam, for the purpose specified.

12. A machine for stitching eyelet-holes, comprising essentially a rotating cloth-carrier, stitch-forming mechanism including a reciprocating needle-bar and needle, means to vibrate said needle-bar to form a series of radial stitches around the hole, means to arrest automatically the vibratory movement of the needle-bar between the hole and the



outer extremity of the radial stitches while the reciprocation of said needle-bar continues at the point where thus arrested and while the feeding motion progresses uninterrupt-  
 5 edly, thereby to form a circle of plain stitches around the border of the hole and amid the radial stitches, the said plain stitches embracing the radial stitches and tying them down, and means to stop the machine at any point  
 10 during the formation of either the radial stitches or the plain stitches, substantially as described.

13. The combination of feed mechanism having a rotary motion, stitch-forming mechanism including a reciprocating needle-bar  
 15 and needle, means to vibrate said needle-bar to form a series of radial zigzag stitches, and automatic means to arrest the vibratory movement of the needle-bar at some point between  
 20 the limits of its vibration and while its reciprocating motion continues, thereby to form a circle of plain lock-stitches which severally embrace the constituent threads of each over-  
 seam-stitch.

25 14. A machine for stitching eyelet-holes, comprising essentially a feed mechanism having a rotary motion, stitch-forming mechanism including a reciprocating needle-bar and  
 30 needle, means to vibrate said needle-bar to form a series of radial stitches around the hole, and means to arrest automatically the vibratory movement of the needle-bar between the hole and the outer extremity of the  
 35 radial stitches and continue the reciprocation of said needle-bar at the point where thus arrested and while the feed motion progresses uninterruptedly, thereby to form a circle of  
 40 plain stitches around the border of the hole and amid the radial stitches, the said plain stitches embracing the radial stitches and tying them down.

15. An eyelet-sewing machine, comprising

a feed mechanism, means for overseaming the edges of the perforation with radial stitches, automatic means for arresting the radial  
 45 stitching, and automatic means for inserting a circular line of plain stitches around the perforation and amid the radial stitches and thereby intersecting and stitching down the  
 50 said radial stitches, substantially as described.

16. In a sewing-machine, the combination with stitch-forming mechanism comprising a needle-bar, of a work-support, means to produce a vibratory movement of the needle relatively to the work-support, and other inde-  
 55 pendent automatic means to suspend such movement at a predetermined time to permit tying-stitches to be sewed.

17. In a sewing-machine, the combination with stitch-forming mechanism comprising a  
 60 needle-bar frame, of a work-support, a main rock-lever, a pitman connecting said lever and the needle-bar frame, a supplementary rock-lever, means to actuate said last-named  
 65 lever, and means to connect and disconnect said levers, whereby the movement of the first-named lever may be suspended.

18. In a sewing-machine, the combination with stitch-forming mechanism, of a work-  
 70 support, a rock-shaft, a lever rigidly secured to said shaft and engaging a cam, a main rock-lever loosely mounted on said shaft, a pitman connecting said last-named lever to the needle-bar, a latch connection between  
 75 said levers, and means to release the latch at a predetermined time to suspend the vibratory movement of the needle.

In testimony whereof I have hereunto set my hand this 3d day of April, A. D. 1900.

DONALD NOBLE.

Witnesses:

J. L. FINCH,

WM. H. FINCKEL.