

No. 789,349.

PATENTED MAY 9, 1905.

E. B. ALLEN.

THREAD CONTROLLING DEVICE FOR SEWING MACHINES.

APPLICATION FILED APR. 2, 1904.

4 SHEETS—SHEET 1.

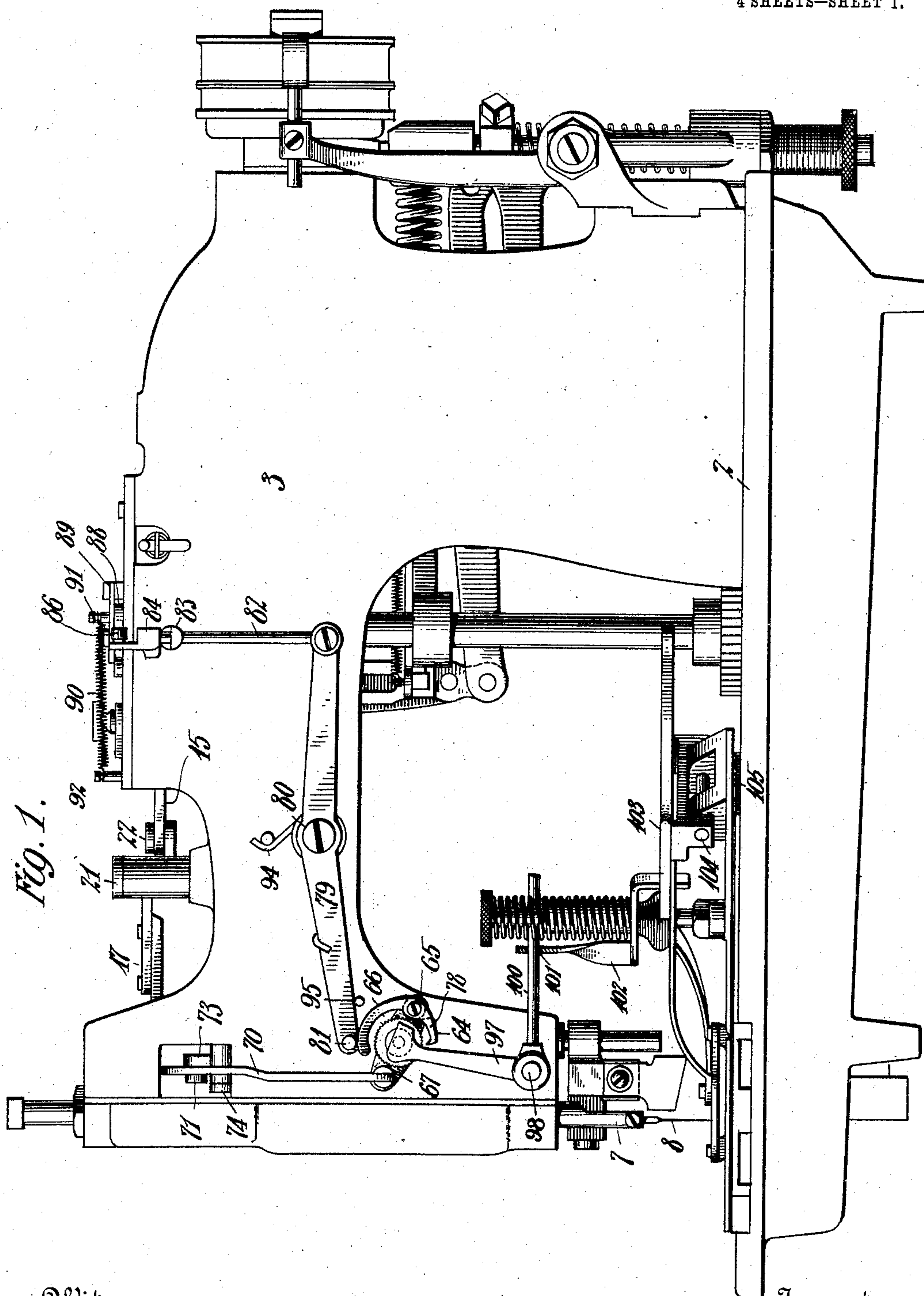


Fig. 1.

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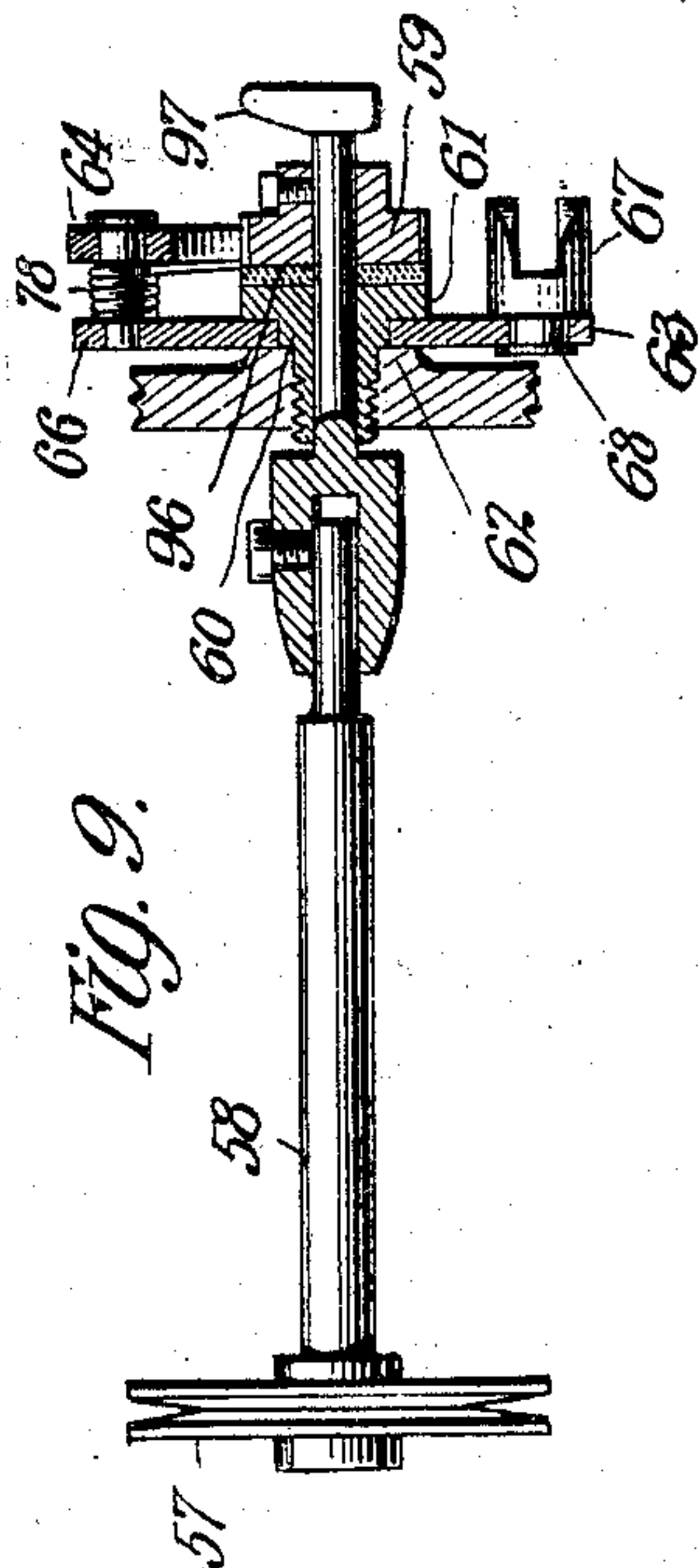


Fig. 9.

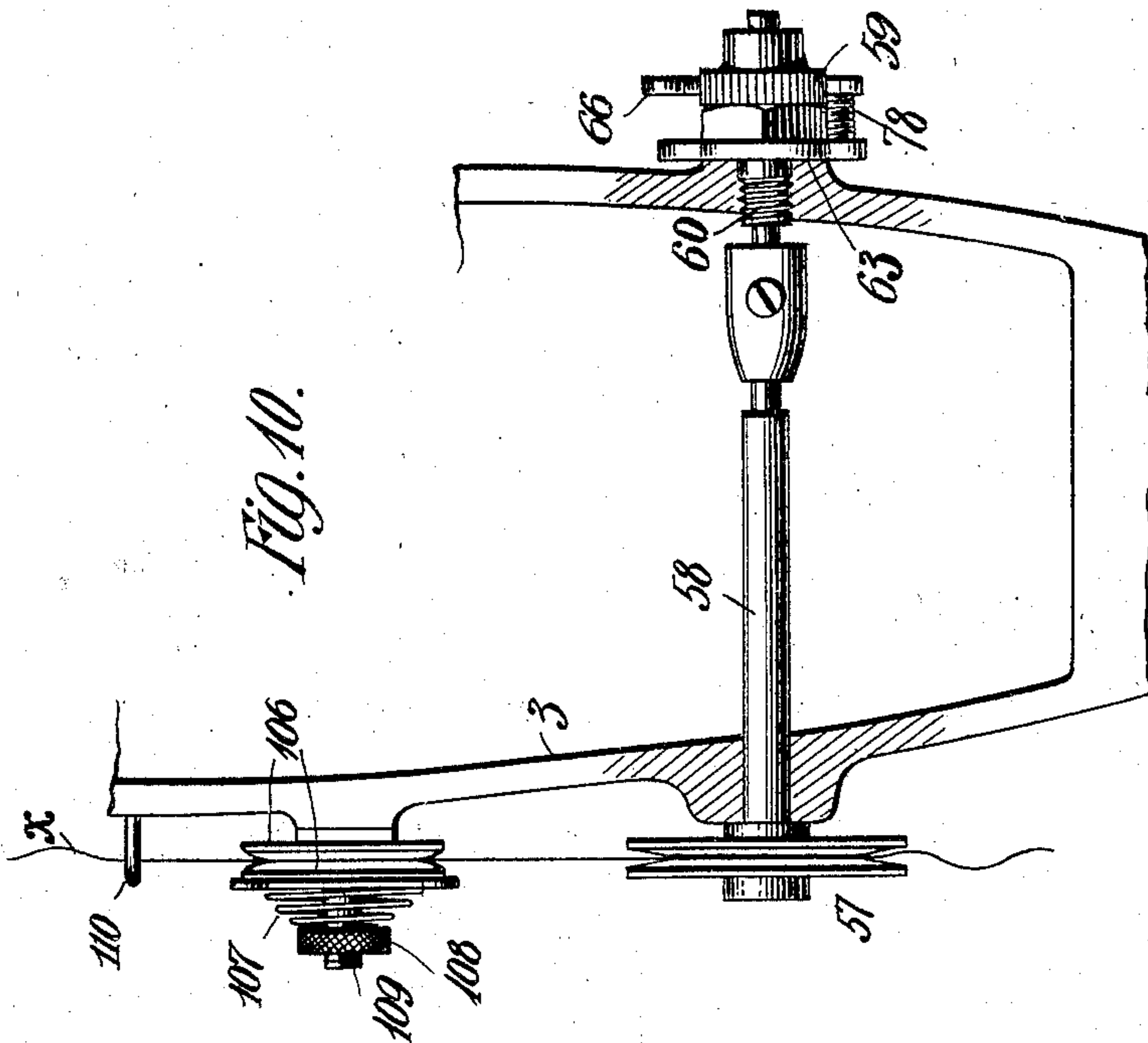


Fig. 10.

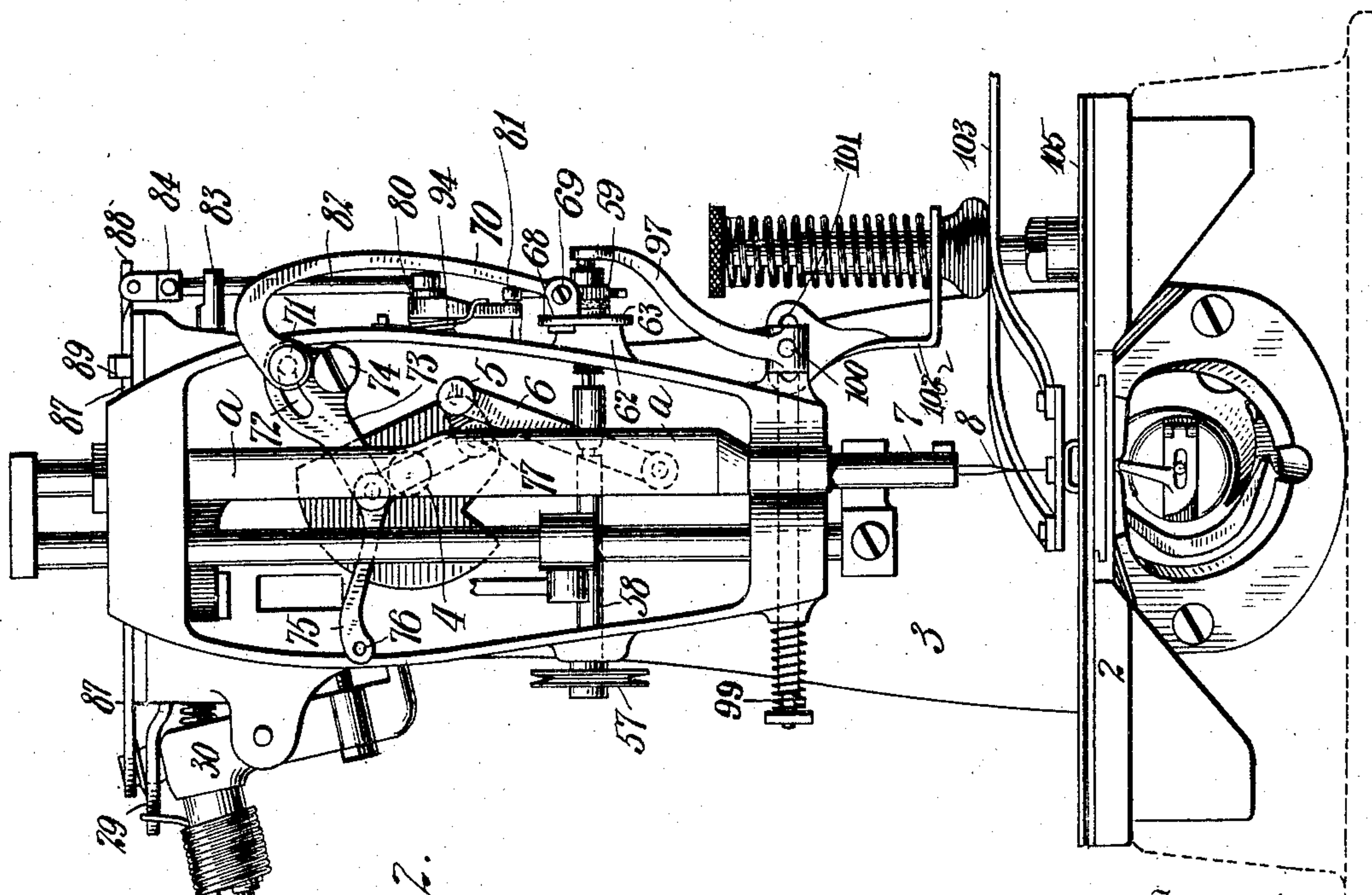


Fig. 2.

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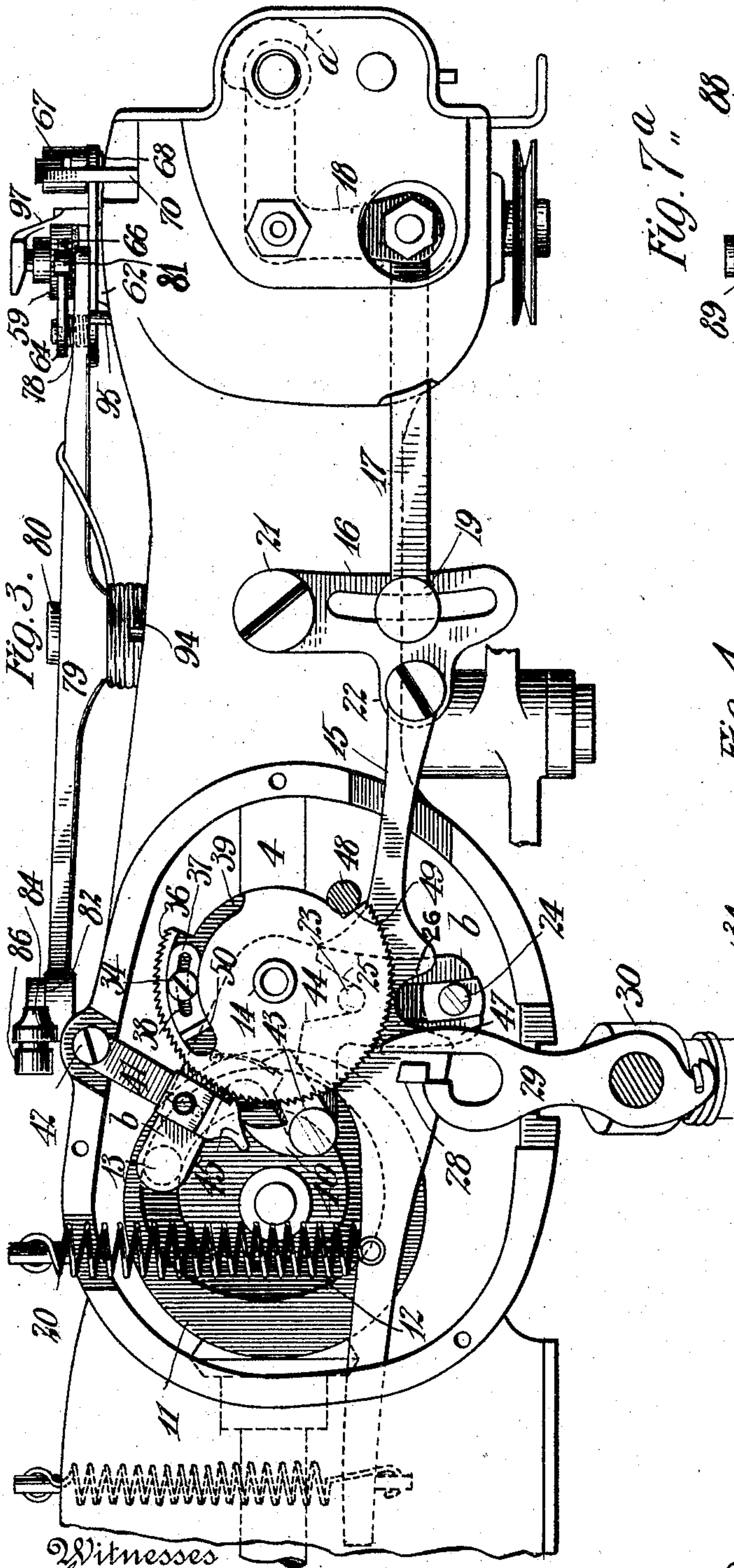
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4 SHEETS—SHEET 3.



Witnesses  
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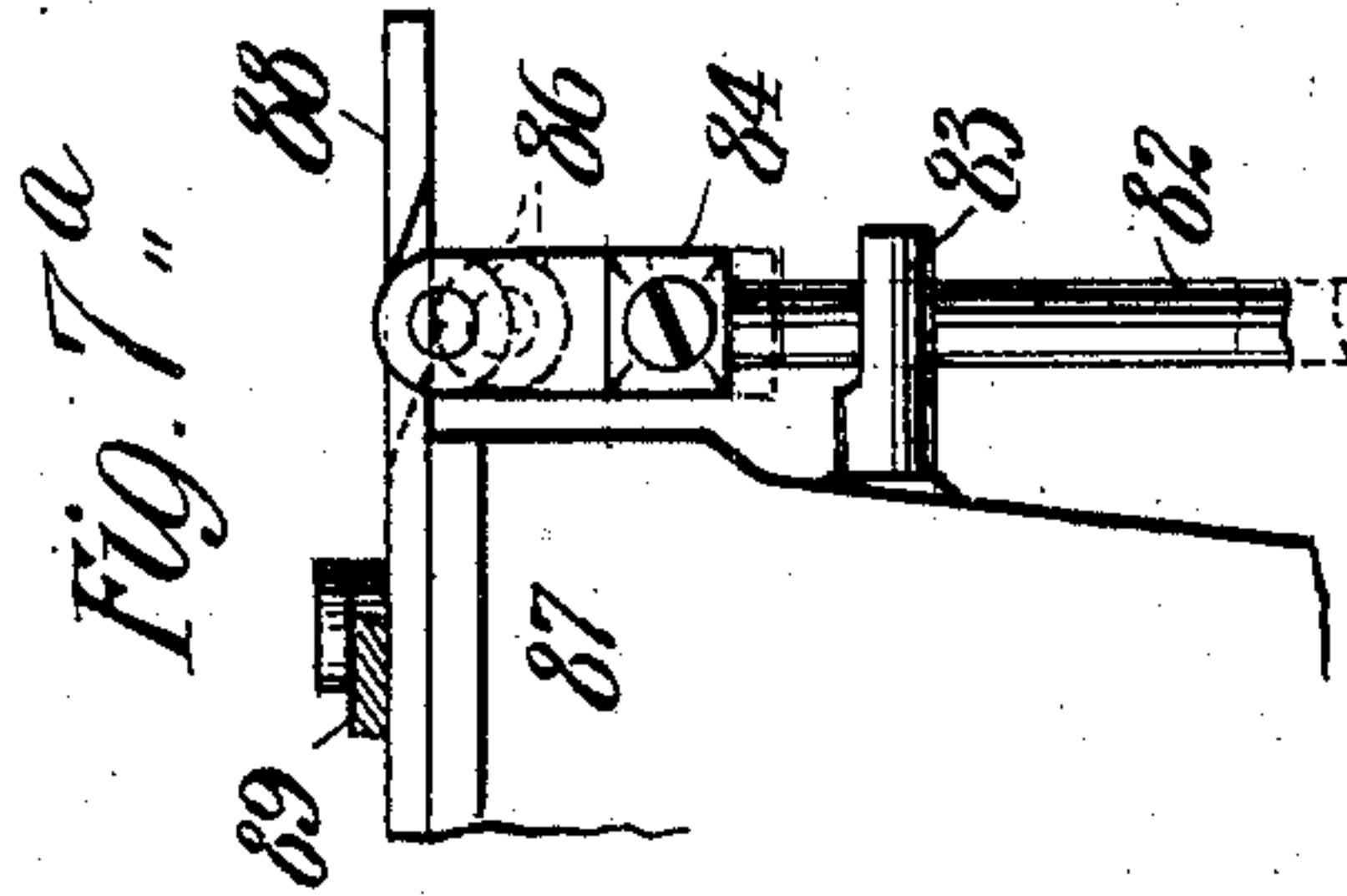
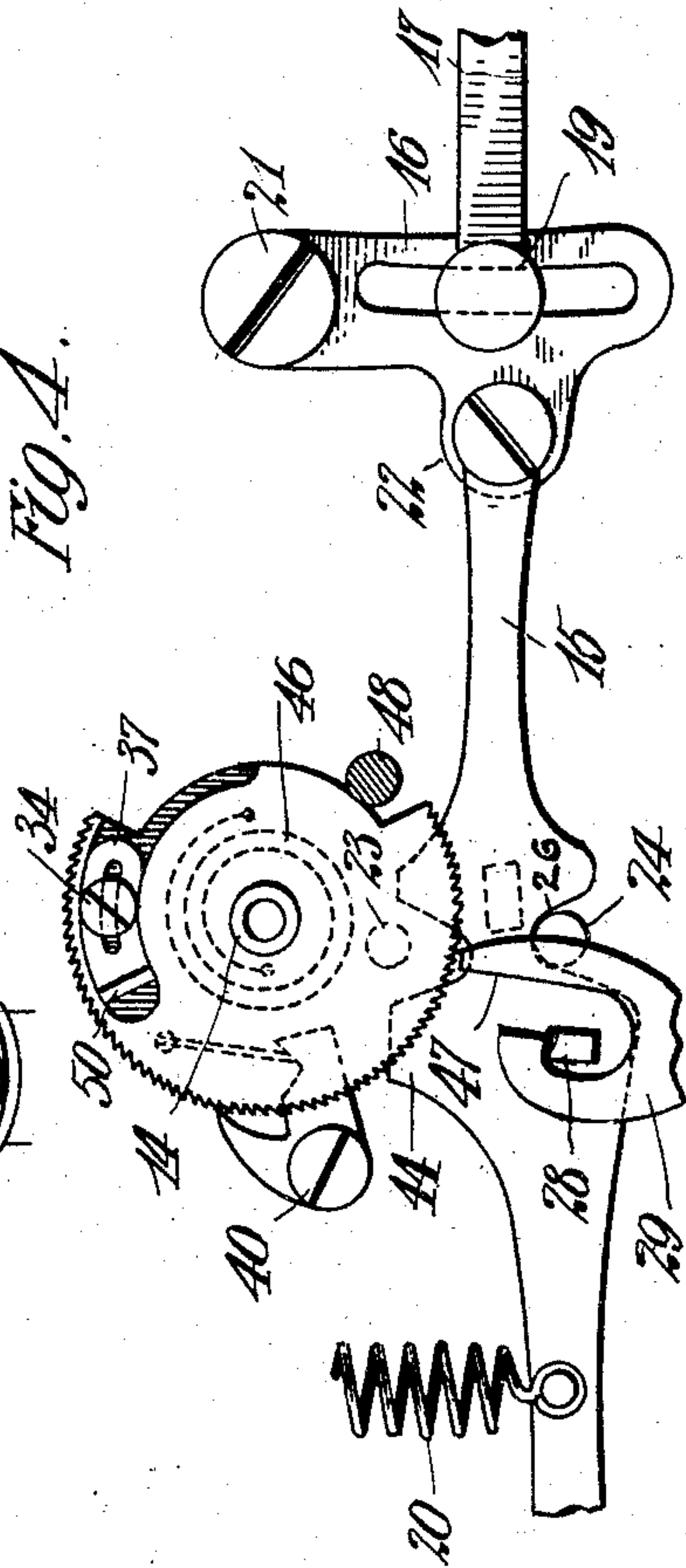


Fig. 4.



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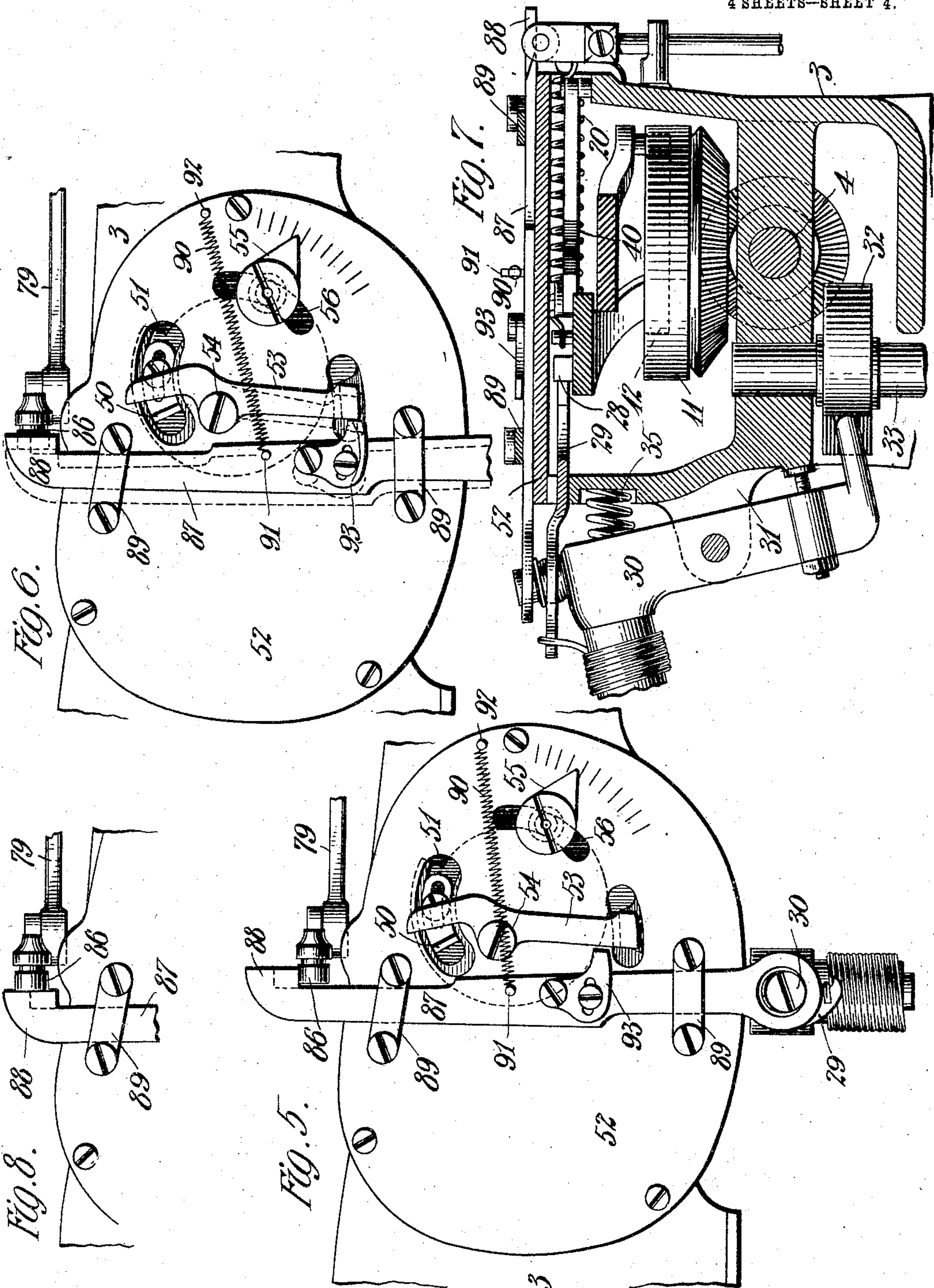
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4 SHEETS—SHEET 4.



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# UNITED STATES PATENT OFFICE.

EDWARD B. ALLEN, OF ELIZABETH, NEW JERSEY, ASSIGNOR TO THE SINGER MANUFACTURING COMPANY, A CORPORATION OF NEW JERSEY.

## THREAD-CONTROLLING DEVICE FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 789,349, dated May 9, 1905.

Application filed April 2, 1904. Serial No. 201,217.

*To all whom it may concern:*

Be it known that I, EDWARD B. ALLEN, a citizen of the United States; residing at Elizabeth, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Thread-Controlling Devices for Sewing-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to an improvement in that class of sewing-machines designed for the formation of stitches in successive groups of different character, and more particularly to buttonhole stitching and barring machines in which the side stitches and bar-stitches are characterized, preferably, by different positions of interlock of their component threads to enable them to perform with the requisite effectiveness their respective functions in the finished buttonhole.

The invention has for its object to simplify and increase the effectiveness of a thread-controlling device such as that forming the subject of the United States Patent No. 757,171, granted to me April 12, 1904; and to this end it consist in the several constructive features herein set forth, and pointed out in the appended claims.

The invention will be understood by reference to the annexed drawings, in which—

Figure 1 is a side elevation of a buttonhole stitching and barring machine embodying the present improvements. Fig. 2 is a front end elevation of the same with the face-plate removed. Fig. 3 is an enlarged plan view of the forward portion of the overhanging arm of the machine, with the cover-plate of the casing inclosing the barring mechanism removed to expose the parts beneath, the operative parts being represented as in side-stitching position; and Fig. 4 is a partial plan view of the barring mechanism with the operative parts in barring position. Figs. 5 and 6 are plan views illustrating the timing mechanism for the thread-feeding device at different stages of operation, and Figs. 7 and 7<sup>a</sup> are respectively a transverse section of the sewing-machine arm and a similar partial view rep-

resenting such timing mechanism in corresponding different-stage positions. Fig. 8 is a partial plan view similar to Figs. 5 and 6, showing the thread-feed timing mechanism in still another position. Fig. 9 is a partial sectional elevation of the thread-feed-wheel shaft and connected parts. Fig. 10 is a sectional elevation representing the lower portion of the head of the overhanging arm provided with a modified form of thread tension and feeding device.

As in my prior patent before mentioned, the machine in which I have embodied the present improvements is constructed with a frame comprising the usual work-plate 2 and overhanging arm 3, with the driving-shaft 4 having at its forward end the needle-bar-actuating crank 5, which is connected by pitman 6 with the needle-bar 7, carrying the needle 8 and mounted in the swinging frame or gate *a*, to which lateral movements are communicated from the grooved cam-wheel 11 with cam-groove 12, entered by a pin or stud 13 of the lever or rocker *b*, having its fulcrum or center of motion at 14 and connected, through a bar 15, attached at 22 to the slotted swinging arm 16, pivoted at 21, and link 17, adjustably connected to the arm 16 at 19, with an arm 18 of the needle-bar frame. The lever or rocker *b* has two pins 23 and 24, the former of which normally engages a notch 25 of the bar 15 under the action of the spring 20 and the latter of which pins is brought temporarily into engagement with the opposite notch 26 of the bar 15 by periodical encounter of the spring-pressed pawl 29 with the pin 28 upon the bar 15, as indicated in Fig. 4, under the action of the bent lever 30, fulcrumed in brackets 31 of the arm 3, which is vibrated in opposition to its spring 35 by means of the double snail-shaped cycle-cam 32 upon the feed-wheel shaft 33 to reciprocate the pawl 29 attached thereto at the upper end in initiating the barring action at the end of each side-stitching operation.

The ratchet-wheel 36, loosely mounted upon a pivotal stud at 14, has a segmental controlling-plate 37 secured adjustably in a corresponding



groove 39 of said wheel by a screw 34 entering the slot 38 in the plate 37. The spring-pressed operating-pawl 40, carried by the lever 7, and the detent-pawl 41, pivoted on a screw or stud 42 upon the bracket-arm 3, are adapted to engage the ratchet-wheel 36 during the barring operation, the pawl 40 having a tripping-arm 43 engaged by the projection 44 on the bar 15 as the latter passes from barring to side-stitching position, the finger 45 of the detent-pawl 41 being simultaneously engaged by the pawl 40 to release the ratchet-wheel 36 to enable it to return to initial position under the impulse of the spiral spring 46.

The segmental plate 37 carries a lug 50, passing through a slot 51 in the cover-plate 52 of the barring-mechanism casing, which lug engages one arm of the bent lever 53, pivoted at 54, whose other arm has a depending portion engaging the finger 47 of the pawl member 29 for the release of the pin 28 to permit the bar 15, under the action of its spring 20, to assume its initial side-stitching position, as represented in Fig. 3, which action causes the lifting of the pawls 40 and 41 to enable the ratchet-wheel 36 to regain its initial position with the shoulder 49 in contact with the stop-pin 48, having a pointer 55, the location of which in its slot 56 of the cover-plate 52 determines the initial position of the ratchet-wheel 36, and hence the number of bar-stitches made before engagement of the lug 50 with the lever 53.

The peripherally-grooved combined thread-feeding and tension wheel 57, located between the source of thread-supply and the needle, is fixed upon one end of a shaft 58, movable slightly endwise, passing through the head of the overhanging arm and having fixed to its opposite end portion the ratchet-wheel 59. The portion of the tension-wheel shaft 58 adjacent the ratchet-wheel 59 is journaled in an externally-threaded bushing 60, screwed into the head of the overhanging arm and provided with an angular head 61, between which and a boss 62 is loosely mounted the swinging pawl-carrier 63, carrying at one end the pawl 64, pivoted upon a screw-stud 65 and having a tail 66, of which the outer edge is substantially concentric with the ratchet-wheel 59, which it partially surrounds when the pawl is in inoperative relation to the latter. The pawl-carrier is provided at the opposite end with a forked block 67, pivotally connected to the same by a screw-stud 68 and connected in its forked portion by means of a pivotal screw 69 with the lower end of a curved link 70, whose opposite end is connected with the take-up mechanism by means of the shouldered screw 71 entering a segmental slot 72 in a corresponding lateral enlargement of the swinging fulcrum-lever 73, pivoted at the adjacent end upon a fixed stud 74 and whose other end carries a pin consti-

tuting the fulcrum of the angular take-up lever 75, the extremity of one arm of which is provided with the thread-hole 76 and the extremity of the other arm of which is connected with a crank-pin 77 adjacent to but circumferentially offset from the needle-bar-actuating crank-pin.

In order to adjust the amplitude of vibration of the pawl-carrier 63, the pivotal screw 71 of the link 70 may be adjusted circumferentially in the slot 72 of the swinging lever 73, so as to vary the degree of vertical movement of such pivotal screw and its connected link 70 in reference to the fulcrum-stud 74 of such take-up lever.

As the actuating mechanism for communicating to the tension-wheel 57, serving also as the thread-feeding member, its step-by-step rotary feeding movements comprises the swinging lever 73, common to the take-up mechanism, deriving its reciprocatory movements from the double-crank member 77, whose other member 5 imparts the vertical reciprocations to the needle-bar, it will be observed that such actuating mechanism includes a connection not only with the take-up mechanism, but also with the stitch-forming mechanism.

As the actuating device of the pawl-carrier 63, by reason of its connection with the take-up mechanism, vibrates the pawl-carrier continuously throughout the operation of the stitch-forming mechanism with which it is connected through the double crank actuating the needle-bar and take-up, in order to interrupt such action in the production of successive groups of stitches of different character, as in the formation of the side and bar stitches of a buttonhole, it is necessary to provide means for holding the pawl 64 disengaged from the ratchet-wheel 59 in opposition to the spring 78 normally pressing the pawl into operative relation with said ratchet-wheel to arrest the positive rotation of the tension-wheel shaft. To this end a lever 79 is mounted upon a screw-stud 80 upon the arm of the machine and provided upon one end with a roller-stud 81 adjacent to the tail of the pawl 64 and is pivotally connected at its other end with a push-rod 82, having its upper portion guided in a perforated stud 83 and carrying at its extremity a block 84, upon which is mounted a pin or roller-stud 86. A rod 87, loosely attached at one end to the upper end of the lever 30 and provided at the other end with a cam-head 88, is mounted upon the cover-plate 52 and loosely embraced by the guide-straps 89 to adapt it to slide both lengthwise under the impulse of the lever 30 in initiating the barring operation and crosswise under the action of the spring 90, extending between the stud 91 thereon and the fixed stud 92 upon the cover-plate, and the lever 53, engaging a projecting portion of



the adjustable contact-piece 93 upon the sliding rod 87, at the conclusion of the barring operation.

During the side-stitching operations the lever 79 is held by the spring 94, surrounding the pivotal stud 80, with its forward end normally depressed into contact with the stop-pin 95 and its roller-stud 81 in engagement with the tail of the pawl 64, as indicated in Figs. 1 and 2, whereby the continued vibration of the pawl-carrier 63 is prevented from mechanically turning the shaft 58 with its tension-wheel 57. In this position of the lever 79 the push-rod 82 is elevated sufficiently to expose its roller-stud 86 slightly above the bottom of the sliding rod 87, whose cam-head 88 rests against the end of such roller-stud, as shown in Figs. 1, 2, 7, and 8. As the side stitching progresses and the lever 30 forces the sliding rod 87 forward under the action of the cycle-cam 32 to the position shown in full lines in Fig. 7<sup>a</sup> the contracted portion of the rod 87 adjacent the head 88 snaps in behind the roller-stud, as shown in Fig. 5, and when the lever 30 moves outwardly under the action of its spring 35 to draw the rod 15 into barring position it also draws the sliding rod 87 in the same direction, and the beveled forward portion of the cam-head 88, engaging the roller-stud 86, forces the same downwardly, as indicated in full lines in Fig. 6 and in dotted lines in Fig. 7<sup>a</sup>, whereby the rear end of the lever 79 is depressed and the forward end raised to disengage the roller-stud 81 from the tail of the pawl 64, thereby permitting the latter under the action of its spring 78 to drop into engagement with the ratchet-wheel 59, so that the continued vibratory movements of the pawl-carrier 63 serve to mechanically impart to the tension-wheel shaft a step-by-step movement, and thus the tension-wheel produces a corresponding feed to the needle-thread encircling the same. At the conclusion of the barring operation the engagement of the adjacent end of the lever 53 by the lug 50, carried by the barring ratchet-wheel 36, causes the opposite end of such lever to engage the contact-piece 93 of the rod 87, whereby the cam-head 88 is forced laterally in opposition to the spring 90 from contact with the roller-stud 86, as indicated in dotted lines in Fig. 6, and the latter, with the push-rod carrying the same, is permitted to rise under the stress of the spring 94, (represented in Figs. 1, 2, 7, and 8,) the forward end of the lever being consequently depressed and the pawl 64 again disengaged from the ratchet-wheel.

In order that the thread-wheel member 57 of the combined thread tension and feeding device may impose a uniform frictional drag upon the needle-thread, a friction device is employed which comprises a washer 96, of felt or other yielding material, interposed be-

tween the opposed fixed and movable clamping members, of which the head 61 of the bushing 60 constitutes the one and the adjacent face of the ratchet-wheel 59, (serving the additional function of a thrust-collar,) constitutes the other, and the thread-wheel shaft 58 is normally pressed inwardly by engagement of its adjacent end with the inclined cam-shaped outer end portion of a swinging arm or lever 97, fixed to one end of a spindle 98, passing transversely through the head of the overhanging arm of the machine and having at its opposite end an adjusting-nut, between which and the side of the overhanging arm is interposed a tension-spring 99. The hub of the arm 97 carries a lateral arm 100, entering a horizontal slot 101 in a standard 102, carried by the movable upper member 103 of the work-clamp, which is pivotally connected at 104 with the work-clamp slide 105. When the upper member of the work-clamp is raised to open the clamp and release the work, the standard 102 is correspondingly elevated, which through the lateral arm 100 causes the lateral movement of the pressure-lever 97 for its temporary disengagement with the end of the thread-wheel shaft, and hence the removal of the frictional resistance to free rotation of the thread-wheel to permit the drawing out of the needle-thread in removing the work or shifting it for the succeeding buttonhole-stitching operation. The closing of the work-clamp causes the reversal of such tension-releasing operation by reengagement of the arm 97 with the end of the thread-wheel shaft 58, and hence the reclamping of the friction-washer 96 between the ratchet-wheel 59 and bushing-head 61.

From the foregoing description it will be observed that during the side-stitching operation the thread-wheel is given a step-by-step rotating movement by the pull of the thread under the usual action of the take-up in setting each of the stitches; but during the barring operation, when the thread-feeding devices come into action, the thread-wheel is positively rotated in such manner as to feed the entire amount of thread required for each stitch without permitting the take-up to pull through the tension device the requisite amount, as in its normal operation.

It is evident, as implied in my former patent, that the thread-feeding and tension devices need not have a common thread-engaging member, such as the combined thread-tension and feeding-wheel 57 above described. In Fig. 10 is shown a modification comprising an ordinary tension device, consisting of a pair of tension-disks 106, normally pressed together by means of a spring 107, interposed between an adjusting-nut 108 upon the threaded pin 109 and the outer tension-disk, the needle-thread  $\alpha$  being led from the source of thread-supply through the guide-eye 110, between the tension-disks 106, and around the



thread-feeding wheel 57, which latter rotates idly under the normal pull of the take-up and exerts its influence upon the thread only when its actuating devices are in operation to positively impart to it step-by-step rotations. In this modification it is evident that no friction device is necessary to impose a resistance to the free rotation of the thread-wheel shaft 58. It is obvious that the specific character of the thread-engaging member of the thread-controller is not limited to the rotary form disclosed herein and that the effective operation of such member in either embodiment described is not necessarily confined to the formation of stitches of alternate groups, as provided by the cam-actuated mechanism illustrated in the drawings annexed.

In the thread-controlling device forming the subject of my former patent the thread-tension and feeding-wheel was lacking to some extent in accessibility by reason of the location upon the same side of the machine-arm of the means for periodically rotating it; but in the present invention by extending the tension-wheel shaft completely through the head of the overhanging arm I have been enabled to dispose the actuating mechanism upon the opposite end of such shaft from the thread-wheel, whereby the latter is maintained readily accessible for the purpose of threading.

It is evident that in case it should be found desirable at any time to discontinue the operation of the thread-feeding mechanism as herein described, it would be merely necessary to disconnect the spring 90 from the fixed stud 92 and connect it to some fixed member at the other side of the rod 87 or to disconnect the bent link 70 from the swinging lever 73.

It is to be understood that the present invention is not limited to the details of construction herein shown and described, as they may obviously be widely varied without departure from the spirit of the invention.

Having thus set forth the nature of the invention, what I claim herein is—

1. In a sewing-machine, the combination with stitch-forming mechanism comprising a reciprocating needle and an actuating-shaft from which its reciprocations are derived, and a loop-taker cooperating with said needle in the formation of stitches, of an intermittently-acting thread-feeding device connected with and deriving its feeding movements from said actuating-shaft, a cycle-cam with means for rotating it independently of said actuating-shaft once for each group or succession of stitches produced by the stitch-forming mechanism, and means connected with and actuated by said cycle-cam whereby the effective operation of said thread-feed upon the thread is interrupted during the production of a complete stitch or stitches.

2. In a sewing-machine constructed with a frame comprising a bed-plate and an overhanging bracket-arm, the combination with

stitch-forming mechanism including a vertically-reciprocating needle deriving its movements from a rotary actuating-shaft mounted in said bracket-arm, and a cooperating loop-taker mounted beneath the said bed-plate, of a thread-feeding device operatively connected with said actuating-shaft, a cycle-cam with means for rotating it independently of said actuating-shaft once for each group or succession of stitches produced by the stitch-forming mechanism, and means connected with and actuated by said cycle-cam whereby the effective operation of said thread-feed upon the thread is interrupted during the production of a complete stitch or stitches.

3. In a sewing-machine, the combination with stitch-forming mechanism and a take-up device including a swinging fulcrum-lever and a vibrating thread-engaging lever fulcrumed thereon, of a thread-feeding device comprising a grooved thread-wheel, actuating mechanism for communicating to said thread-wheel step-by-step rotary movements and including a link pivotally connected with said fulcrum-lever, and automatically-acting means whereby said actuating mechanism is maintained inoperative for a group or succession of stitches.

4. In a sewing-machine, the combination with stitch-forming mechanism and a take-up device including a swinging fulcrum-lever and a vibrating thread-engaging lever fulcrumed thereon, of a thread-feeding device comprising a grooved thread-wheel, actuating mechanism for communicating to said thread-wheel step-by-step rotary movements and including a link having a pivotal connection with said fulcrum-lever adjustable toward and from the axis of motion of the latter, and automatically-acting means whereby said actuating mechanism is maintained inoperative for a group or succession of stitches.

5. In a sewing-machine constructed with a frame comprising a bed-plate and an overhanging bracket-arm, the combination with stitch-forming mechanism including a vertically-reciprocating needle deriving its movements from a rotary actuating-shaft mounted in said bracket-arm, and a cooperating loop-taker, of a take-up device having a crank connection with the needle-actuating shaft, a thread-feeding device comprising a grooved thread-wheel, actuating mechanism for communicating to said thread-wheel step-by-step rotary movements and including an operative connection with said take-up device, and means whereby said actuating mechanism is maintained periodically inoperative for a group or succession of stitches.

6. In a sewing-machine constructed with a frame comprising a bed-plate and an overhanging bracket-arm, the combination with stitch-forming mechanism including a vertically-reciprocating needle with an actuating-shaft therefor mounted in said bracket-arm and a cooperating loop-taker, of a vibrating take-up



lever having a suitable crank connection with the needle-actuating shaft and having its thread-engaging extremity disposed at one side of said bracket-arm, an endwise-movable shaft extended transversely through said bracket-arm, and having fixed upon the end adjacent the thread-engaging portion of the take-up lever a tension-wheel and having connected with its opposite end suitable thread-feeding mechanism for positively turning said shaft with its tension-wheel, a friction device comprising fixed and movable opposed members one of which is mounted upon the tension-wheel shaft, and a spring-pressed arm or lever normally engaging the end of said tension-wheel shaft to maintain the opposed members of said friction device in operative engagement.

7. In a sewing-machine constructed with a frame comprising a bed-plate and an overhanging bracket-arm, the combination with stitch-forming mechanism including a vertically-reciprocating needle with an actuating-shaft therefor mounted in said bracket-arm and a cooperating loop-taker, of a vibrating take-up lever having a crank connection with the needle-actuating shaft and having its thread-engaging extremity disposed at one side of said bracket-arm, an endwise-movable shaft extended transversely through said bracket-arm, and having fixed upon the end adjacent the thread-engaging portion of the take-up lever a tension-wheel, and having connected with its opposite end suitable thread-feeding mechanism for positively turning said shaft with its tension-wheel, a friction device comprising fixed and movable opposed members one of which is mounted upon the tension-wheel shaft, a spindle extending transversely through said bracket-arm, an arm or lever intermediate said spindle and tension-wheel shaft, and a spring applied to said spindle and operating through the same and said arm or lever for normally maintaining an endwise pressure upon the tension-wheel shaft for producing a frictional drag between the said opposed members of the friction device.

8. In a sewing-machine, the combination with stitch-forming mechanism and a work-clamp having a movable upper member, of a tension-wheel, an endwise-movable shaft therefor, a friction device comprising fixed and movable opposed members one of which is mounted upon the tension-wheel shaft, thread-feeding mechanism for positively turning the said tension-wheel, a spring-pressed arm or lever normally engaging the end of said tension-wheel shaft for producing a frictional drag between the opposed members of the friction device, and a connection between said work-clamp and said arm or lever whereby the latter is shifted by the opening of the work-clamp to relieve the frictional drag upon the tension-wheel shaft.

9. In a sewing-machine constructed with a frame comprising a bed-plate and an overhanging bracket-arm, the combination with stitch-forming mechanism including a vertically-reciprocating needle with a rotary actuating-shaft therefor mounted in said bracket-arm and a cooperating loop-taker, of a vibrating take-up lever having a crank connection with the needle-actuating shaft and with its thread-engaging extremity extended to one side of said bracket-arm, a thread-wheel around which the needle-thread is passed intermediate the thread-supply and the take-up and disposed upon the same side of the said bracket-arm as the take-up, a shaft extended transversely through the said bracket-arm upon one end of which said thread-wheel is mounted, and means operatively connected with said take-up and applied to said shaft at the end opposite said wheel for turning the same.

10. In a sewing-machine, the combination with stitch-forming mechanism comprising a reciprocating needle and an actuating-shaft from which its reciprocations are derived, and a loop-taker cooperating with said needle in the formation of stitches, of a rotary thread-wheel, a transverse shaft for said thread-wheel extending through the frame of the machine, means for normally imposing a frictional resistance to the rotation of said thread-wheel, means connected with said actuating-shaft whereby step-by-step rotary movements may be communicated to said thread-wheel to draw off thread for each stitch, a cycle-cam with means for rotating it independently of said actuating-shaft once for a group or succession of stitches produced by the stitch-forming mechanism, means connected with and actuated by said cycle-cam whereby the movements of said thread-wheel may be interrupted in the production of a plurality of stitches, and a device for removing the frictional resistance to the rotation of said shaft.

11. In a sewing-machine, the combination with the main shaft and stitch-forming mechanism including a reciprocating needle having an operative connection with said main shaft, of a thread-feeding device comprising a grooved wheel, a ratchet-wheel connected with the said grooved wheel, a pawl-carrier with means for reciprocating it for each stitch during the operation of the machine, a spring-pressed pawl mounted upon said carrier and adapted to engage said ratchet-wheel, a vibrating lever provided at one end with means for maintaining said pawl normally out of operative relation with said ratchet-wheel and at the other end with means for tilting said lever for producing the engagement of said pawl and ratchet-wheel, a rotary cam moving at a slower speed than the said main shaft, and a connection between said cam and lever operating means for alternately producing the



engagement and disengagement of said pawl and ratchet-wheel respectively during the production of a complete stitch or stitches.

12. In a sewing-machine, the combination 5 with stitch-forming mechanism, of a thread-feeding device comprising a wheel around which the thread is passed intermediate the thread-supply and the needle, a ratchet-wheel connected with the thread-feeding wheel, a 10 pawl-carrier with means for reciprocating the same for each stitch during the operation of the machine, a spring-pressed pawl mounted upon said carrier and adapted to engage said ratchet-wheel, a spring-pressed vibrating lever 15 provided at one end with means for maintaining said pawl normally out of operative relation with said ratchet-wheel and at the other end with a pivotally-connected push-rod, a sliding rod mounted upon the machine- 20 frame and provided with a cam-head adapted to engage said push-rod, a cam, a connection between said cam and the sliding rod for effecting the periodical engagement of said sliding rod with the push-rod, and means for 25 periodically shifting said sliding rod laterally to disengage it from said push-rod.

13. In a sewing-machine, the combination with stitch-forming mechanism, of a thread-feeding mechanism including a grooved wheel, 30 a ratchet-wheel connected with said grooved wheel, a vibrating pawl-carrier mounted concentrically of said ratchet-wheel with means for vibrating the same for each stitch during the operation of the machine, a spring-pressed 35 pawl carried by said pawl-carrier capable of assuming operative and inoperative positions with said ratchet-wheel, and having a tail curved concentrically with the latter when the pawl is in inoperative relation therewith, a 40 movably-supported controlling member in contact with which the tail of said pawl moves when in inoperative relation to said ratchet-wheel, and automatically-acting means for disengaging said controlling member from the 45 tail of said pawl and maintaining such disengagement to enable the said pawl to assume

and to maintain its operative relation with said ratchet-wheel during the production of a complete stitch or stitches.

14. In a sewing-machine, the combination 50 with the main shaft carrying a take-up-actuating crank-pin, a reciprocating needle and complementary stitch-forming mechanism, and a take-up comprising an angular lever of which one arm is provided with a thread-eye and 55 another is connected to said crank-pin, and a swinging lever to the outer end of which the angular take-up lever is fulcrumed, of a thread-feeding device comprising a thread-wheel and rigidly-connected ratchet-wheel, a 60 pawl adapted to engage said ratchet-wheel, and a reciprocating carrier for said pawl connected with and actuated by said swinging lever, and automatically-acting means for periodically maintaining said pawl out of engage- 65 ment with the ratchet-wheel to interrupt the effective action of said thread-feeding device.

15. In a sewing-machine, the combination with the main shaft provided with a take-up-actuating crank-pin and stitch-forming mechanism, of take-up mechanism comprising an 70 angular lever of which one arm is provided with a thread-eye and the other is connected to said crank-pin, and a swinging lever to the outer end of which the angular take-up lever 75 is fulcrumed, and a thread-feeding device comprising a rotary feed-wheel, a connected ratchet-wheel, a reciprocating carrier connected with said swinging lever and carrying 80 a pawl adapted to engage said ratchet-wheel, and means controlled independently of said swinging lever for causing said pawl to periodically assume operative and inoperative relations with said ratchet-wheel.

In testimony whereof I have signed my name 85 to this specification in the presence of two subscribing witnesses.

EDWARD B. ALLEN.

Witnesses:

THOMAS F. LLOYD,  
HENRY J. MILLER.