

No. 681,735.

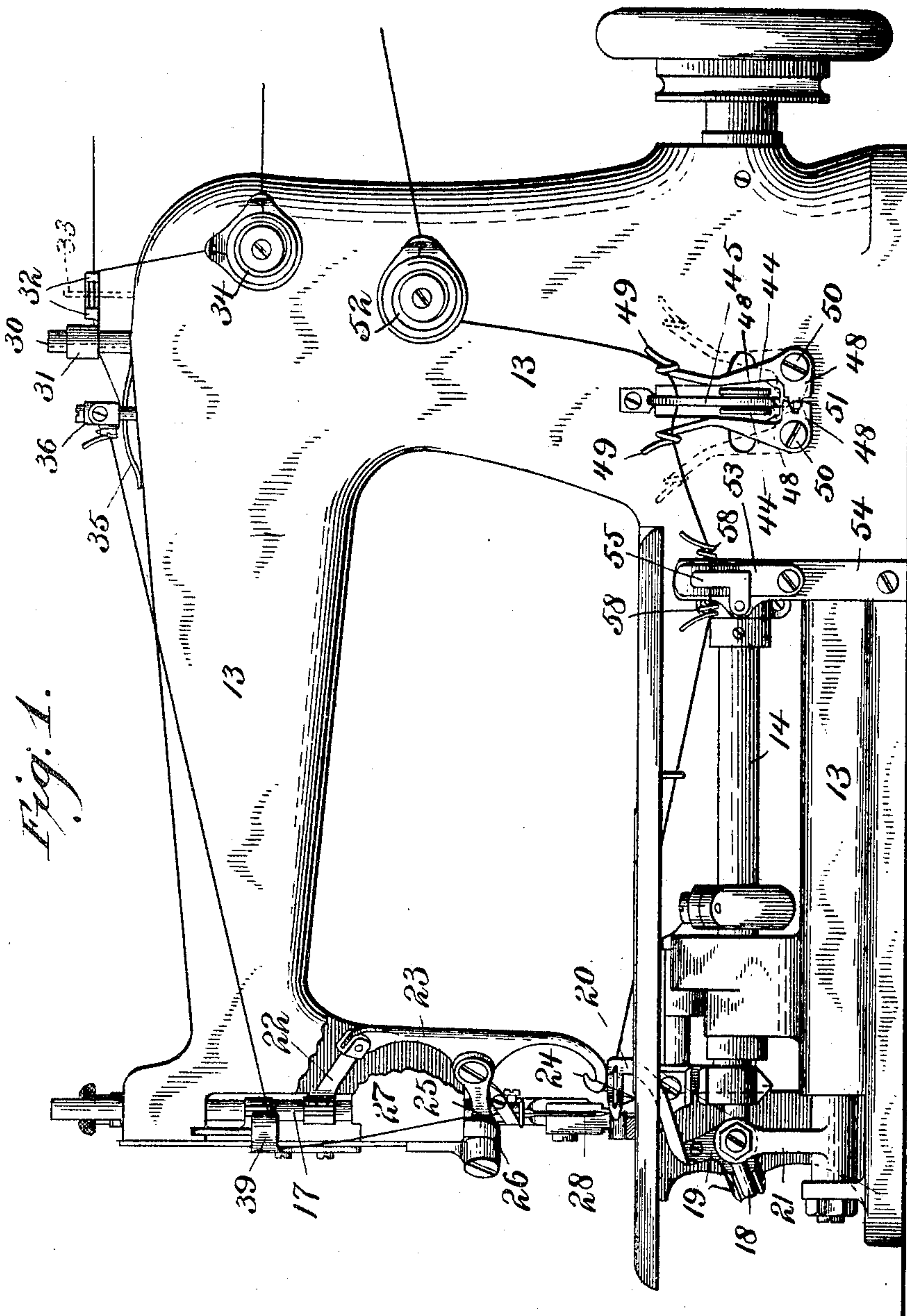
Patented Sept. 3, 1901.

A. RONTKE.
OVERSEAMING SEWING MACHINE.

(Application filed Jan. 17, 1901.)

(No Model.)

3 Sheets—Sheet 1.



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3 Sheets—Sheet 2.

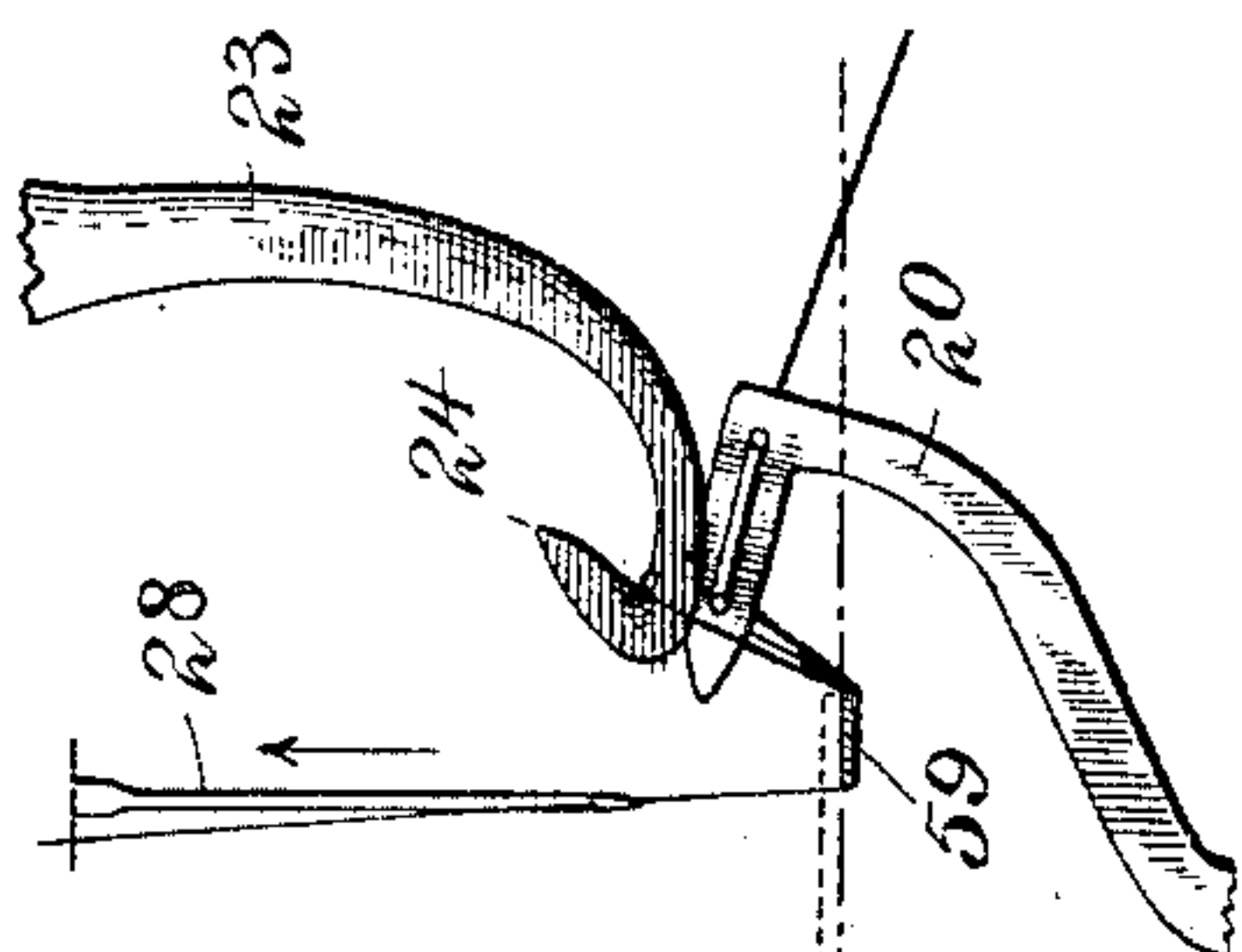


Fig. 5.

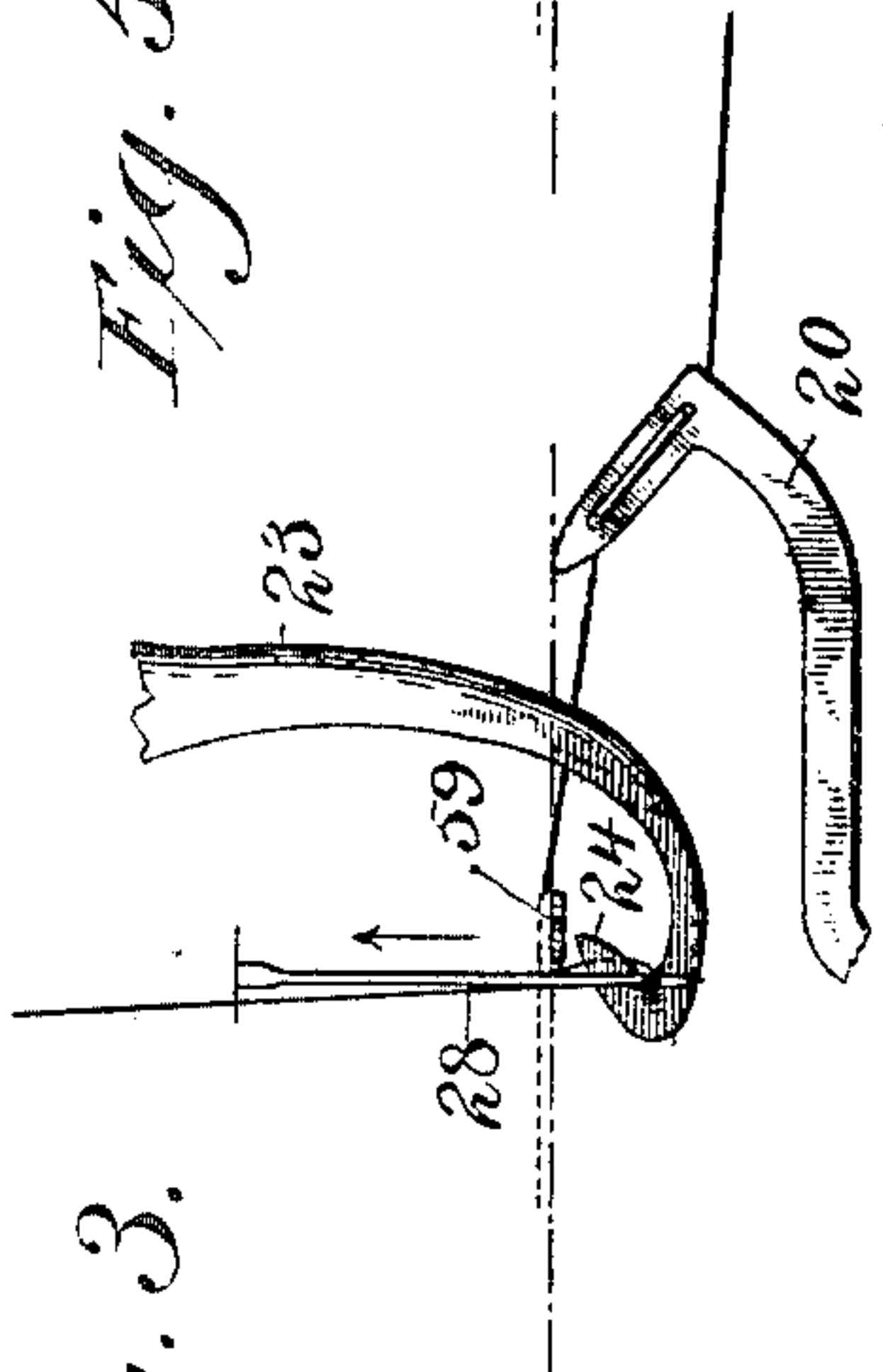


Fig. 3.

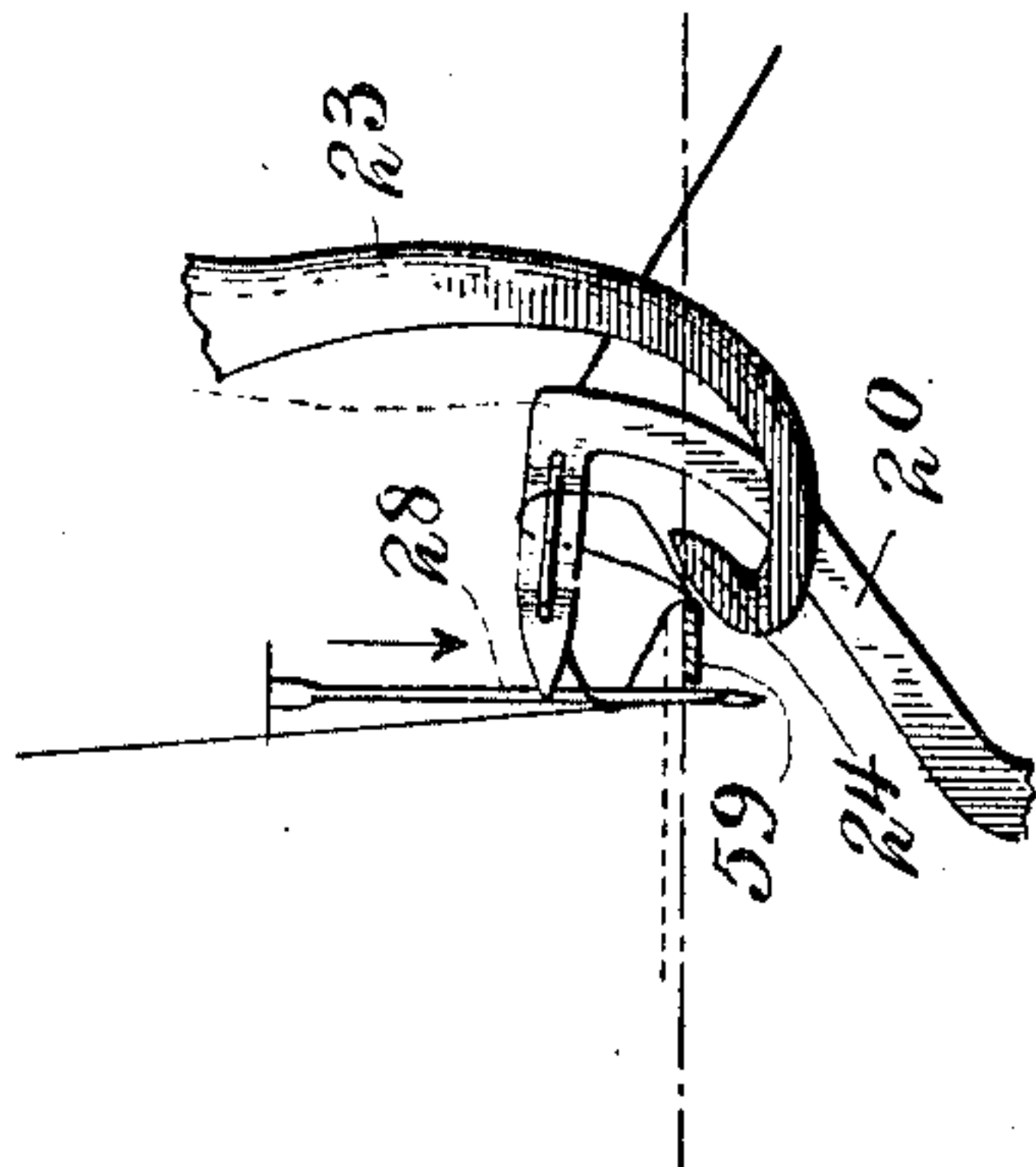


Fig. 6.

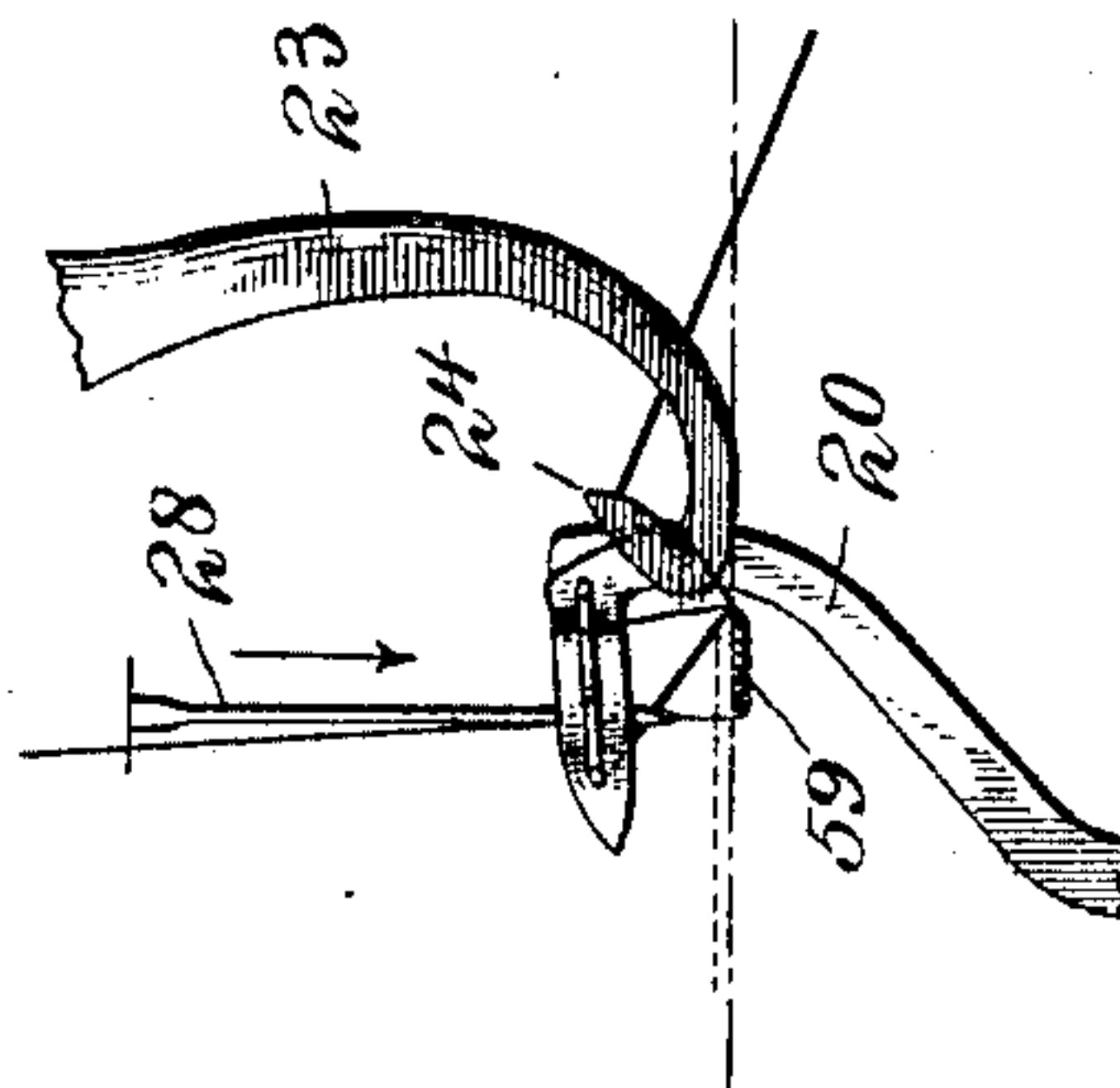


Fig. 4.

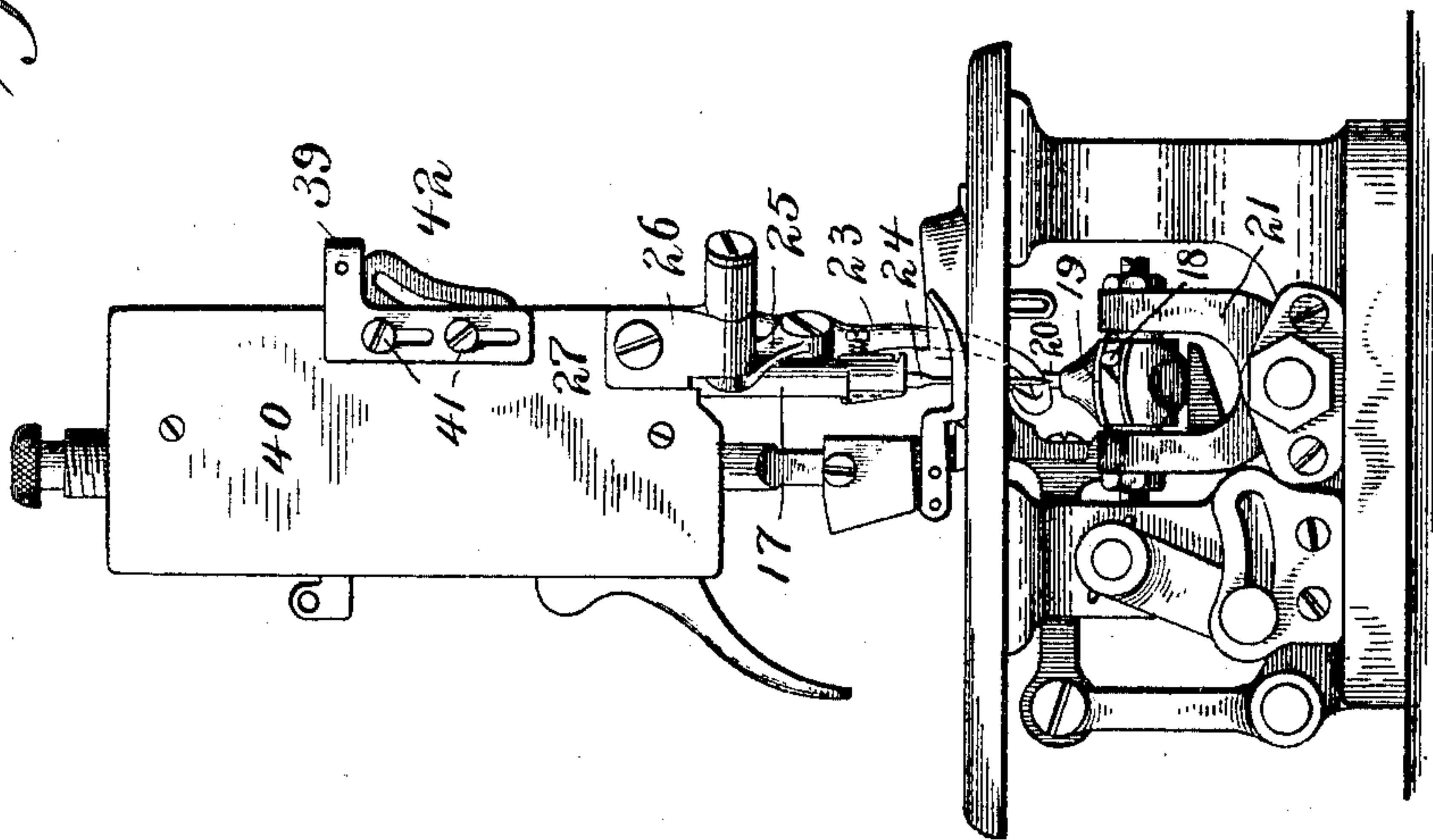


Fig. 2.

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3 Sheets—Sheet 3.

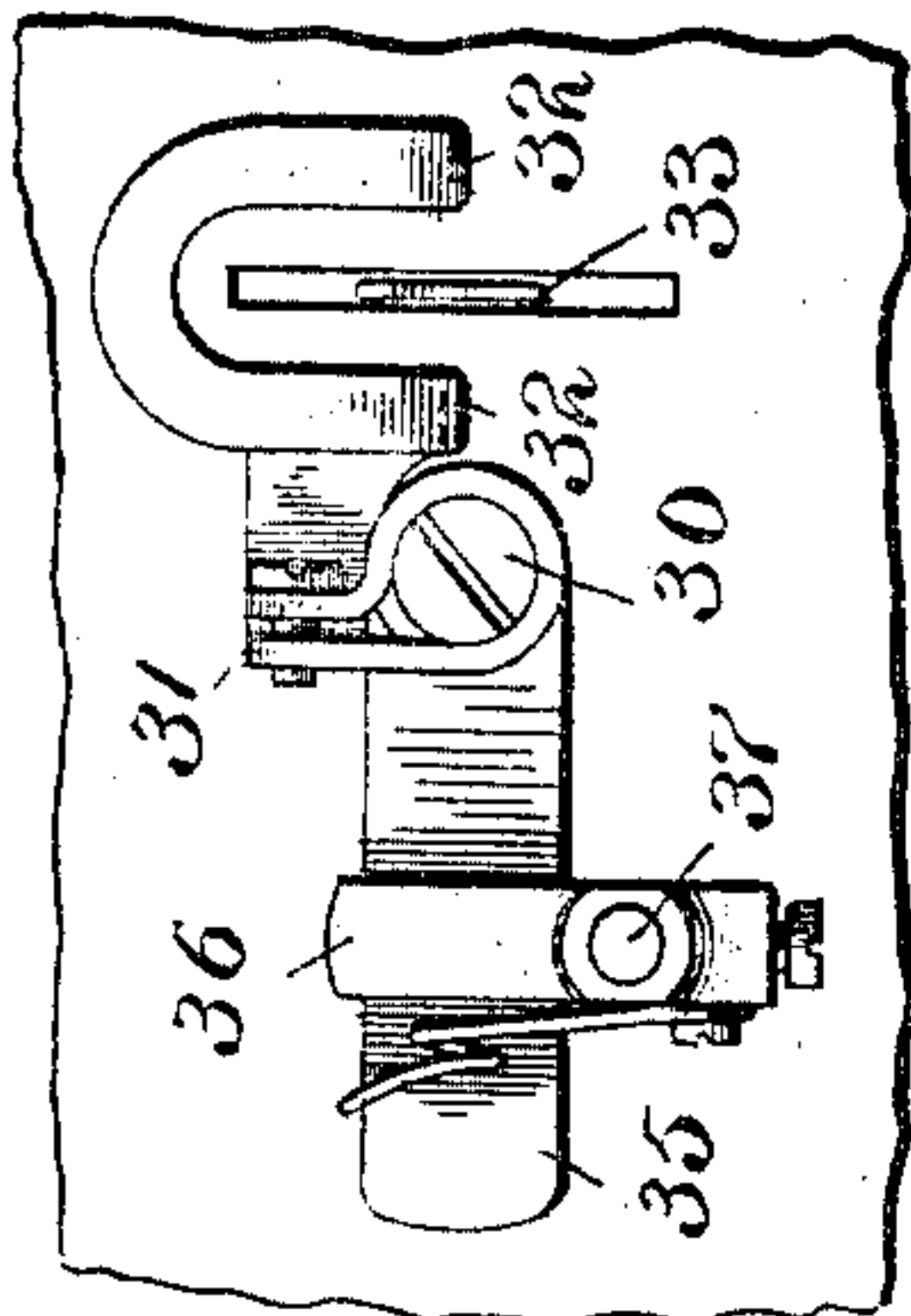


Fig. 9.

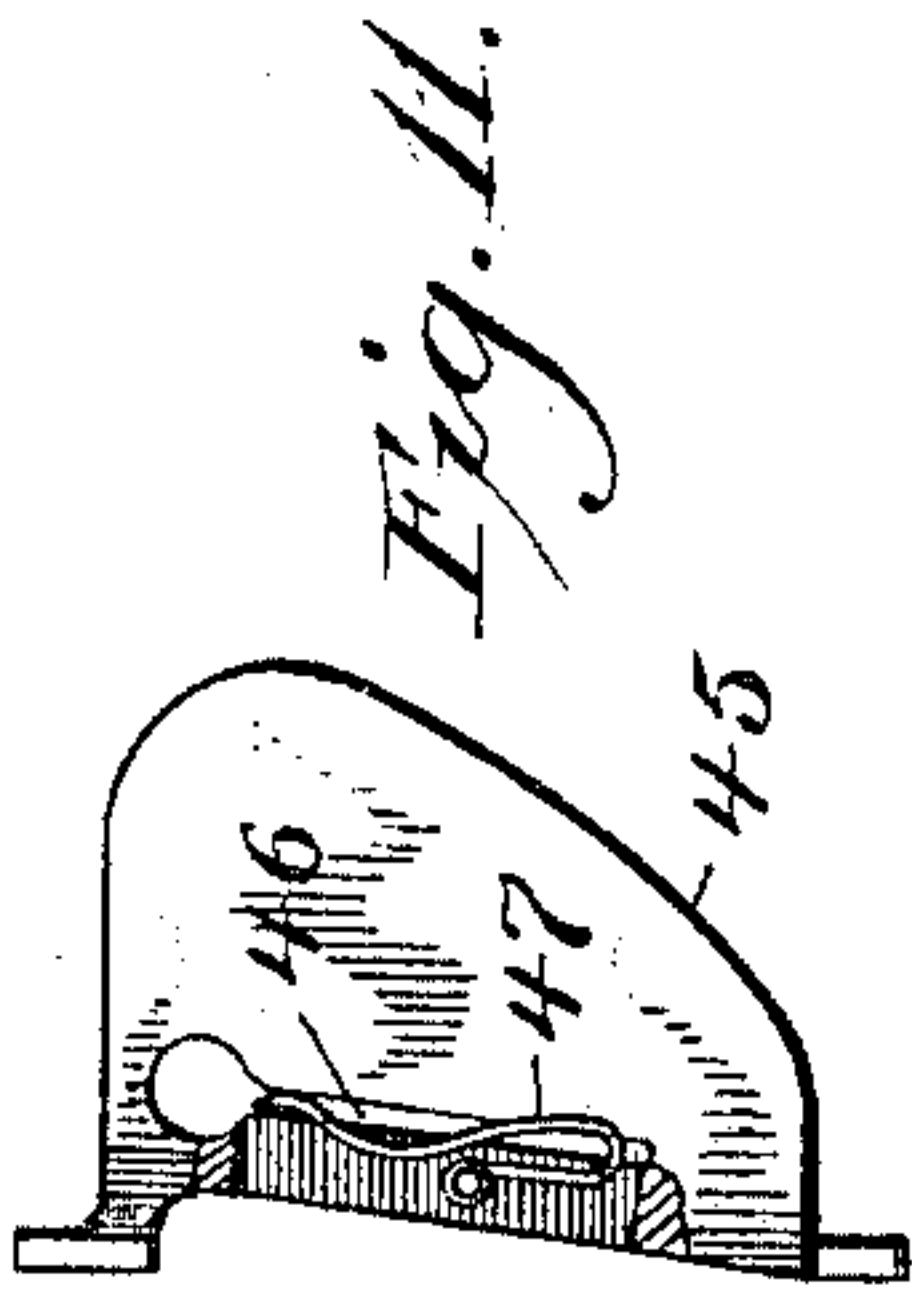


Fig. 11.

Fig. 12.

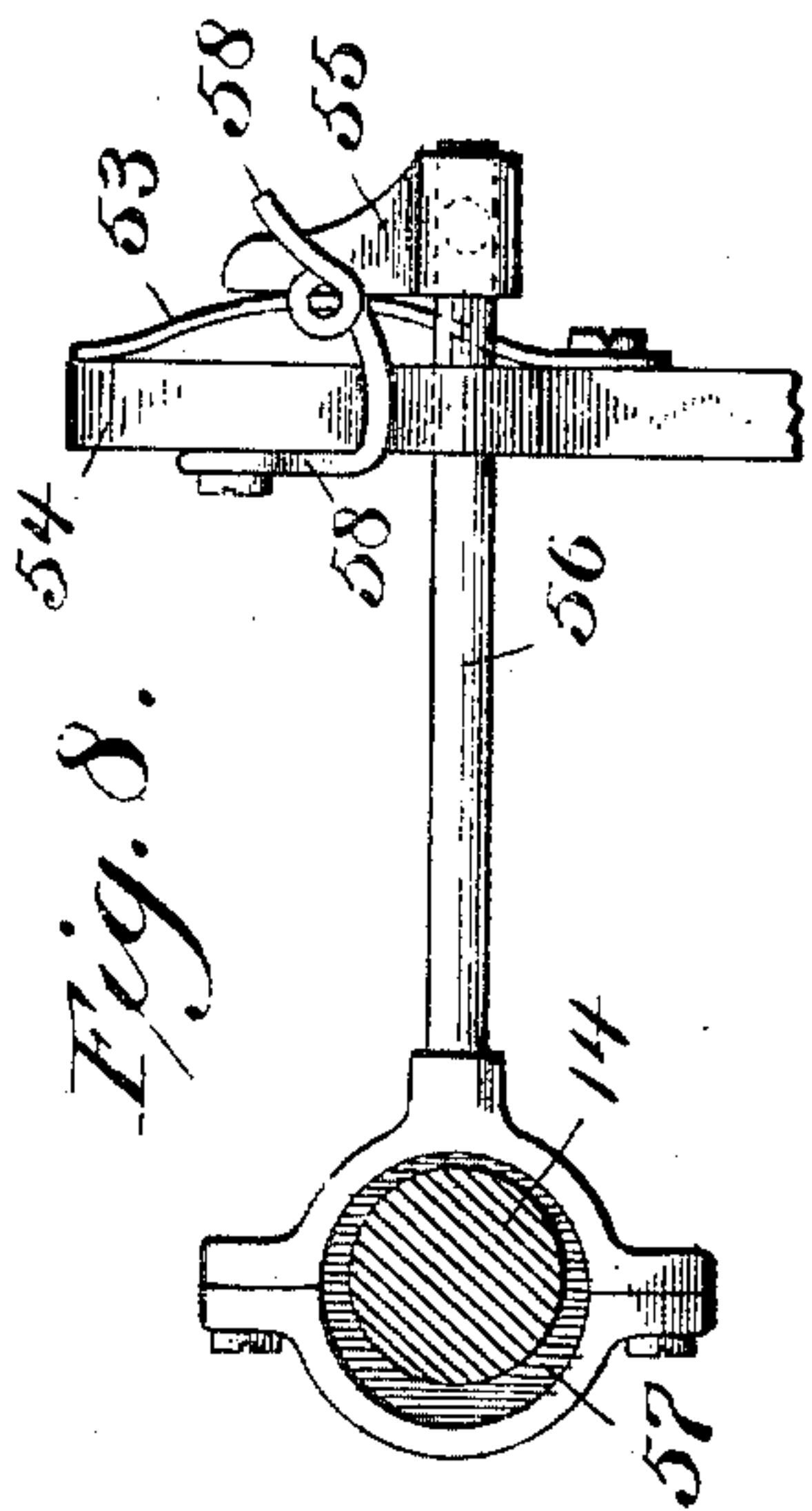
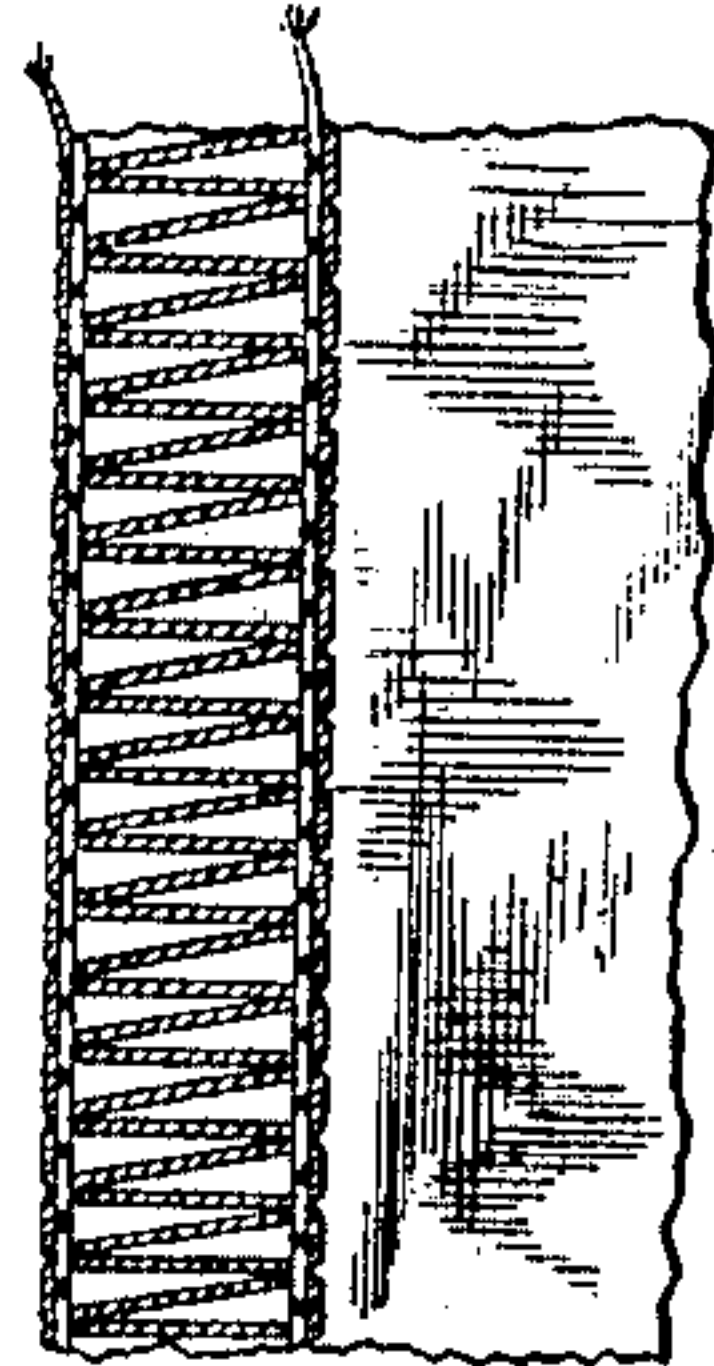


Fig. 8.

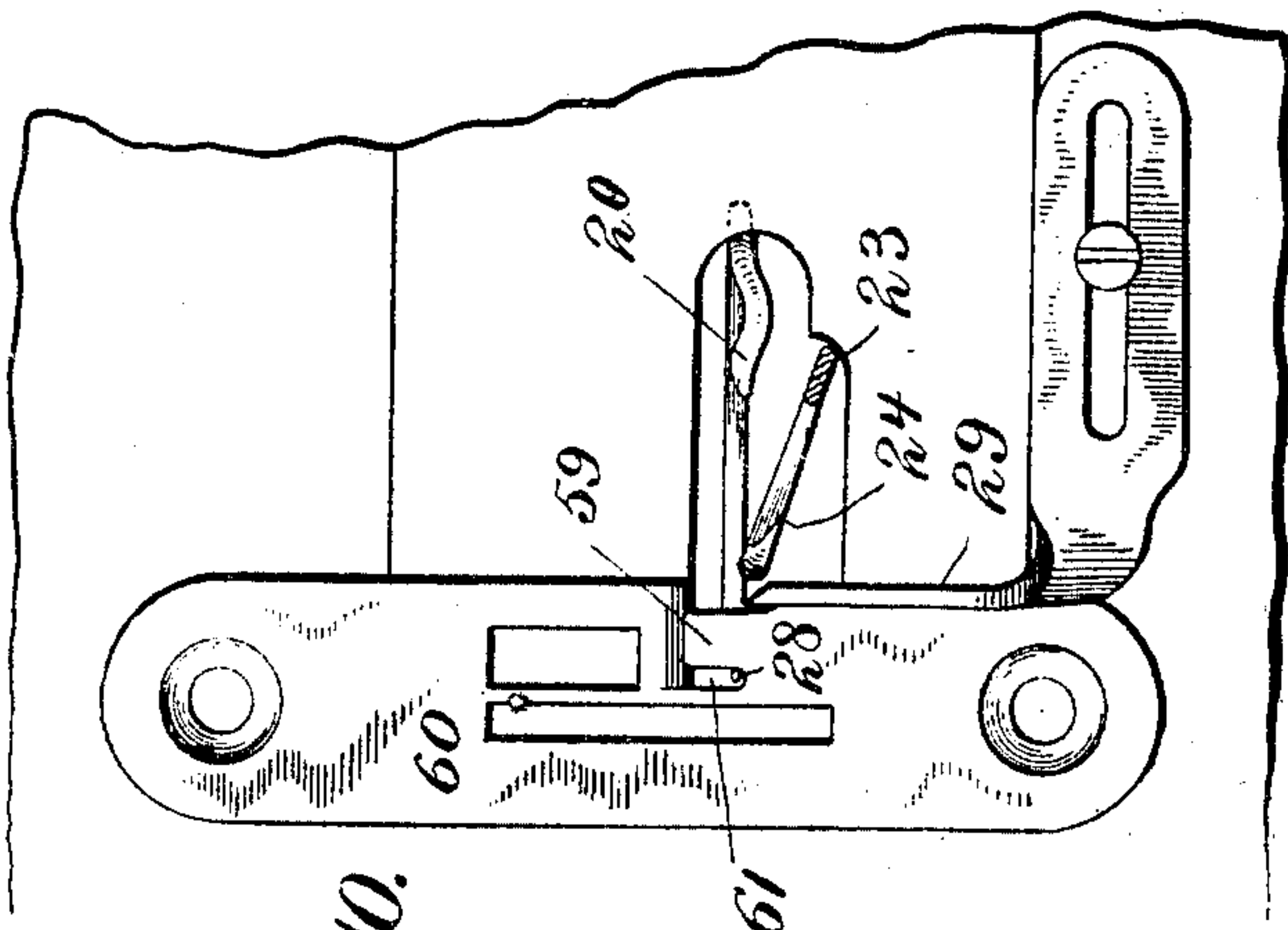


Fig. 10.

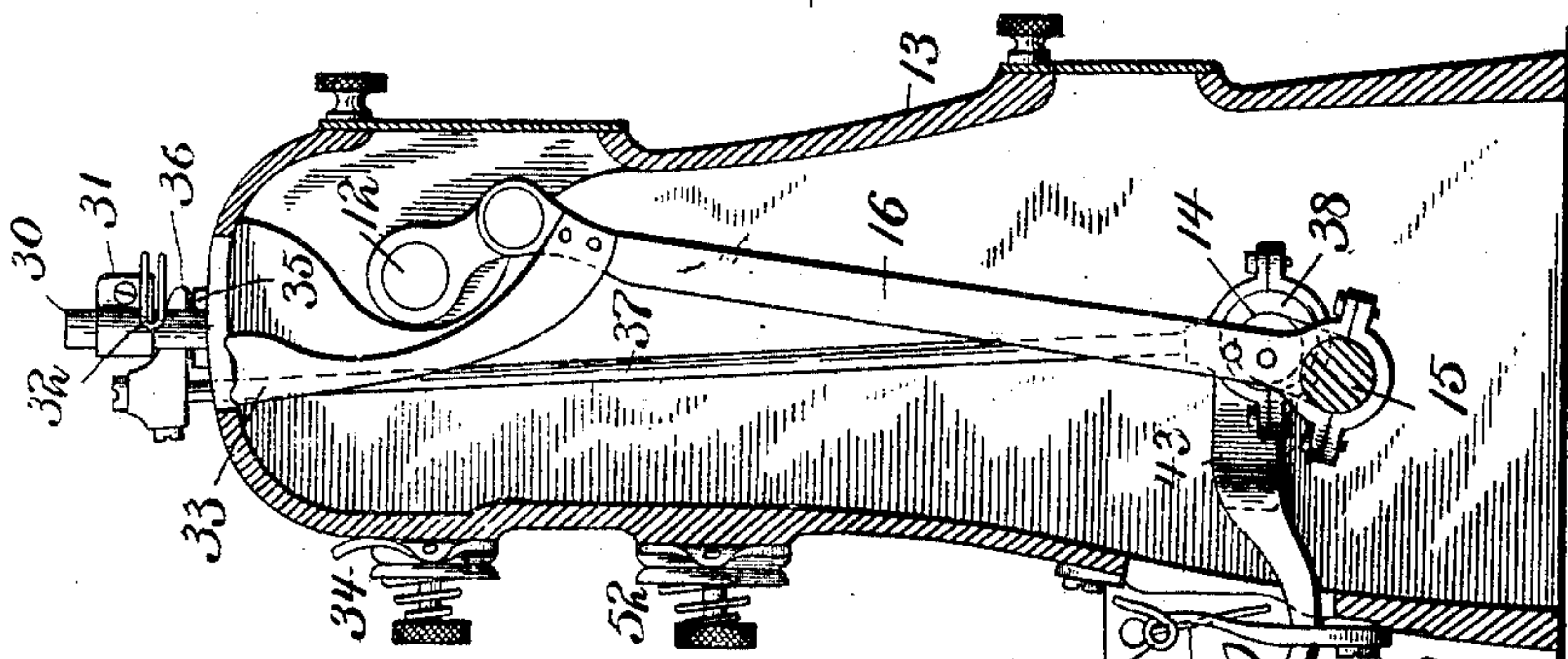


Fig. 7.

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UNITED STATES PATENT OFFICE.

ALBERT RONTKE, OF ELIZABETH, NEW JERSEY, ASSIGNOR TO THE SINGER MANUFACTURING COMPANY, OF NEW JERSEY.

OVERSEAMING SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 681,735, dated September 3, 1901.

Application filed January 17, 1901. Serial No. 43,598. (No model.)

To all whom it may concern:

Be it known that I, ALBERT RONTKE, 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 Overseaming Sewing-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to that class of overseaming sewing-machines, in which the over-edge stitches are formed from two concatenated threads carried by a penetrating needle and a looper, and in which loops of needle-
15 thread are taken from the needle below the work by a looping-hook and carried to and past the edge of the goods and lifted above the work, so as to be entered above the material by the thread-carrying looper, which
20 presents its thread in such position that the needle will pass through loops thereof, thus making an overedge seam suitable for ornamental edging or for uniting the edges of two superposed pieces of material; and the in-
25 vention has for its object to provide an overseaming mechanism of the class referred to, in which both threads will be at all times perfectly controlled, thus adapting the machine more particularly for use in making
30 comparatively wide overseaming ornamental edgings as well as for making a uniting over-seam. To this end take-up and pull-off devices and cooperating intermittingly-acting thread-nippers and constant tensions are
35 preferably provided for both the needle and looper threads, as will hereinafter appear.

In the accompanying drawings, Figure 1 is a side view of a sewing-machine embodying the invention. Fig. 2 is a front end view
40 of the same. Figs. 3 to 6, inclusive, are detail views illustrating the operation of the stitch-forming devices. Fig. 7 is a sectional view through the vertical part of the arm of the machine. Fig. 8 is a detail view of the
45 looper-thread nipper and its operating means. Fig. 9 is a detail plan view of the thread-nipping and pull-off devices for the needle-thread. Fig. 10 is a plan view of the throat-plate, showing also the looping-hook or loop-carrier, the thread-carrying looper, and the
50 edge guide for the work. Fig. 11 is a detail

view to show the check-spring for the looper-thread take-up and pull-off device; and Fig. 12 is a diagrammatic view illustrating the overedge seam more particularly as formed
55 for ornamental edging.

Referring to the drawings, 13 denotes the frame of the machine, in the lower part of which is journaled the rotating driving-shaft 14, having near its rear end a crank 15, con-
60 nected by a pitman 16 to an arm at the rear end of a rocking shaft 12, journaled in the upper part of the arm of the machine and operatively connected at its forward end by a pitman in a well-known manner to the
65 needle-bar 17 to reciprocate the latter. The driving-shaft 14 is provided at its extreme forward end with an inclined crank 18, embraced by wings on a vibrating looper-carrier 19, on which the thread-carrying looper 20 is
70 suitably mounted, said looper-carrier being pivotally mounted between the arms of a rocking yoke 21, which permits the looper-carrier to be moved sidewise by an eccentric (not shown) on the shaft 14 to impart a slight
75 sidewise movement to the looper as it is vibrated. This looper-operating mechanism is substantially the same as that of the machine shown and described in United States Patent
80 No. 568,702, granted September 29, 1896, and therefore needs no further description. Rigidly secured to the needle-bar 17 is an arm 22, which pivotally supports a lever 23, provided at its lower end with a looping-hook or
85 non-thread-carrying looper 24, said lever being pivotally connected near its middle to the free end of a swinging link 25, the other end of which is provided with a pin or stud journaled in a bearing-bracket 26, secured to the
90 lower part of the head 27, forming part of the frame of the machine. From this construction and arrangement of parts it results that as the needle-bar reciprocates vertically the lever 23 and the looping-hook thereon will be carried bodily up and down with it, while
95 the swinging link 25, one end of which is fixed relative to the head 27, will cause a swinging movement toward and from the needle 28 to be imparted to the looping-hook at the lower end of said lever, the mountings
100 of the latter being twisted or inclined somewhat relative to a plane extending length-

wise of the machine, so that as the said looping-hook moves toward and from the needle it will travel in a path which is inclined (preferably at an acute angle) to the path traversed by the thread-carrying looper 20, thereby preventing the said looping-hook from interfering with said looper. This relative arrangement of the looping-hook and looper is best shown in Fig. 10.

The operation of the stitch-forming devices just described and which operation will be readily understood from Figs. 3 to 6, inclusive, of the drawings, is as follows: The needle descends and passes its thread through the material at the desired distance from the edge, (determined by the position of adjustment of the edge guide 29,) and as the needle rises its loop is caught by the looping-hook 24, which carries said loop around and above the edge of the material and holds the needle-loop in position to be entered above the work by the thread-carrying looper 20 and which moves forward beneath the needle in a plane substantially transverse to the direction of the feed, carrying a loop of its thread into the loop of needle-thread, and then moves sidewise slightly, so that as the needle descends it will pass, with its thread, between the looper-thread extending from the edge of the material to the eye of the looper, and thus the looper-thread will be looped around the needle-thread at both the inner and outer edges of the overseam on the upper side of the work at each stitch. (See Fig. 12.) The arm portion of the frame 13 is provided at its top with a fixed pin or post 30, to which is clamped a collar 31, supporting a thread-guide consisting of a folded plate cut out to form two arms 32, between which moves at times a pull-off arm 33, attached to the upper portion of the pitman 16, said pull-off arm at proper intervals engaging between said arms 32 the needle-thread running from a constant tension device 34 to the said arms, and thence to a thread-nipping or intermittent tension device consisting, preferably, of a stiff spring-bearing plate 35, against which at intervals impinges a nipping arm or block 36, attached to the upper end of a rod 37, operated by an eccentric 38 on the rotating driving-shaft 14. The thread is suitably guided between the plate 35 and nipping-arm 36 and runs thence forward through two separated thread-eyes formed in the arms of a bracket 39, secured to the face-plate 40 and preferably made vertically adjustable by being provided with slots through which the attaching-screws 41 pass. Attached to or connected with the needle-bar to reciprocate therewith is a take-up and thread-controller, consisting of a plate 42, arranged between the arms of the bracket 39 and having an inclined or irregular slot, the upper wall of which engages the needle-thread and takes up the slack and tightens the stitch when said plate descends to the position shown in Fig. 2, and when the needle-bar rises the inclined shoulder at the outer wall of said

slot carries a bight of thread inward, and thus controls the slack thread occurring at this time. The needle-thread-take-up action may be varied for different lengths of stitches or different widths of overseams by adjusting the bracket 39 vertically, and the pull-off action for said thread may be varied for the same purpose by changing the position of the clamping-collar 31 on the fixed pin or post 30, and thereby varying the height of the thread-guiding arms 32, supported by said collar and between which the moving pull-off arm 33 engages the thread. The variation of the pull-off action for the needle-thread enables just the desired quantity of thread for any given width of overseam to be drawn through the constant tension device 34, the pull-off being thus a measuring pull-off and the take-up device being also a measuring or variable one. The thread-nipping arm or block 36 is so timed in its movements as to engage and nip the needle-thread at the times when both the take-up and pull-off actions are to occur, these two actions being in the present machine simultaneous or practically so. Attached to the lower part of the pitman 15 is a take-up and pull-off arm 43, having two hooks 44, reciprocating on opposite sides of a thread-controlling plate 45, having a thread-slot 46, into which extends a light check-spring 47, housed in a groove or recess in said plate. On opposite sides of the plate 45 are levers 48, provided with guiding-thread eyes 49, said levers being preferably simultaneously adjustable, so that the positions of said thread-eyes may be varied. To this end the said levers are pivoted on the set-screws 50, which when tightened will hold said levers rigidly in place, but which when loosened will permit the said thread-eyes to be moved from or toward each other, and to make this adjusting movement of said levers simultaneous said levers are preferably provided with lower horizontal arms, one of which is notched for the reception of a tooth 51 on the other, so that an adjusting movement of one lever will impart a similar movement to the other. (See dotted lines, Fig. 1.) The looper-thread coming from the thread-supply spool runs from the constant tension device 52 through one of the thread-eyes 49, and thence through the slot in the plate 45 to the other of said eyes, and to a thread-nipping device consisting of the stiff spring-bearing plate 53, attached to the post 54, and a nipping-block 55, preferably adjustably secured to the outer end of a horizontally-reciprocating rod 56, operated from an eccentric 57 on the driving-shaft 14. The thread is guided between the plate 53 and nipping-block 55 by the thread-eyes 58, supported on the said post, and passes thence forward to the looper 20. The thread-nipping device for the looper-thread is so timed relative to the action of the looper-thread take-up and pull-off device that the take-up hooks 44 will move inward far enough to tighten the stitch before the nipping-block 55 engages the said

thread, and the further inward movement of said hooks will then draw a sufficient amount of thread through the tension device 52 for the next stitch. This take-up and pull-off action for the looper-thread may be varied by changing the positions of the thread-eyes 49, carried by the adjustable arms or levers 48, as also, if desired, by slightly changing the position of the nipping-block 55 on the rod 56 to which it is attached. In the operation of the machine the loops of needle-thread are drawn across beneath a thin tongue 59, formed on the throat-plate 60 and lying between the needle-throat 61 and the inner edge of said plate, the said tongue being of a width equal to the width of the overseam to be formed. The loops of thread laid beneath the tongue are drawn off from the latter as the work is advanced by the feed. To provide for the formation of overseams of different widths, interchangeable throat-plates having tongues of different widths will be provided, and the edge-guide 29 will be adjusted in each instance to bring it into line with the inner edge of the tongue.

From the foregoing it will be understood that the invention provides an overseaming sewing-machine in which all of the movements are strong and positive, so that the machine may be run at high speeds, and in which both the needle and looper threads may be at all times perfectly controlled both for different lengths of stitches (determined by the length of feed) and different widths of the overseam, (determined by the width of the tongue 59 and position of adjustment of the edge-guide 29,) owing to the adjustable pull-off and take-up devices for both the needle and looper-threads, and which cooperate with the intermittently-acting thread-nipping devices or intermittent tension devices and the constant tension devices for both of the said threads.

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

1. In an overseaming sewing-machine, the combination with a needle-carrying bar and its operating mechanism, of a thread-carrying looper reciprocating in a plane substantially transverse to the direction of the feed, mechanism for operating said looper, and a looping-hook or non-thread-carrying looper pivoted at its upper end to a rigid arm attached to the needle-bar, means for imparting swinging movements to said looping-hook as it is reciprocated vertically, said looping-hook being so mounted as to swing in a plane which is inclined at a considerable angle to the path of movement of the said thread-carrying looper, so as to avoid interfering with the latter.

2. In an overseaming sewing-machine, the combination with a needle-bar and its operating mechanism, of a thread-carrying looper arranged to reciprocate in a plane substantially transverse to the direction of the feed of the work and to pass through loops of needle-thread above the work, a lever rigidly

attached to said needle-bar, a lever, pivotally secured at its upper end to said lever, and provided at its lower end with a looping-hook, a swinging link jointed at its free end to the said lever and attached at its other end to a stationary part of the machine; whereby, as the said needle-bar is reciprocated, the said looping-hook will be caused to swing inward beneath the work to engage loops of needle-thread and then swing outward past the edge of the work, as it is moved upward, to hold the said loops in position to be entered by the said thread-carrying looper.

3. In an overseaming sewing-machine, the combination with a needle-bar and its operating mechanism, of a thread-carrying looper arranged to reciprocate in a plane substantially transverse to the direction of the feed of the work and to pass through loops of needle-thread above the work, a lever rigidly attached to said needle-bar, a lever, pivotally secured at its upper end to said lever, and provided at its lower end with a looping-hook, a swinging link jointed at its free end to the said lever and attached at its other end to a stationary part of the machine; whereby, as the said needle-bar is reciprocated, the said looping-hook will be caused to swing inward beneath the work to engage loops of needle-thread and then swing outward past the edge of the work, as it is moved upward, to hold the said loops in position to be entered by the said thread-carrying looper, said looping-hook being so mounted as to swing in a plane which is inclined at a considerable angle to the path of movement of said thread-carrying looper, so as to avoid interfering with the latter.

4. In an overseaming sewing-machine, the combination with the needle and its operating mechanism, of a thread-carrying looper arranged to pass through loops of needle-thread above the work, mechanism for operating said looper, a looping-hook or non-thread-carrying looper, means for imparting combined vertical and horizontal movements to said looping-hook to cause it to take loops of needle-thread from beneath the work-plate, carry them above the work-plate and hold them in position to be entered by the said thread-carrying looper, and take-up and pull-off devices for both the needle and looper threads, said take-up and pull-off devices being adjustable so that their action for different lengths or widths of stitches may be varied.

5. In an overseaming sewing-machine, the combination with the needle and its operating mechanism, of a thread-carrying looper arranged to pass through loops of needle-thread above the work, mechanism for operating said looper, a looping-hook or non-thread-carrying looper, means for imparting combined vertical and horizontal movements to said looping-hook to cause it to take loops of needle-thread from beneath the work-plate,

carry them above the work-plate and hold them in position to be entered by the said thread-carrying looper, and take-up, pull-off, intermittingly-acting thread-nipping and constant tension devices for both the needle and the looper threads.

6. In an overseaming sewing-machine, the combination with the needle and its operating mechanism, of a thread-carrying looper arranged to pass through loops of needle-thread above the work, mechanism for operating said looper, a looping-hook or non-thread-carrying looper, means for imparting combined vertical and horizontal movements to said looping-hook to cause it to take loops of needle-thread from beneath the work-plate, carry them above the work-plate and hold

them in position to be entered by the said thread-carrying looper, take-up, pull-off, intermittingly-acting thread-nipping and constant tension devices for both the needle and the looper threads, and adjusting means whereby the take-up and pull-off actions of the said take-up and pull-off devices may be varied for different lengths of stitches or different widths of overseams, as may be required.

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

ALBERT RONTKE.

Witnesses:

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J. F. JAQUITH.