

(No Model.)

7 Sheets—Sheet 1.

C. NECKER.

MACHINE FOR SEWING SWEAT BANDS IN HATS.

No. 585,874.

Patented July 6, 1897.

Fig. 1

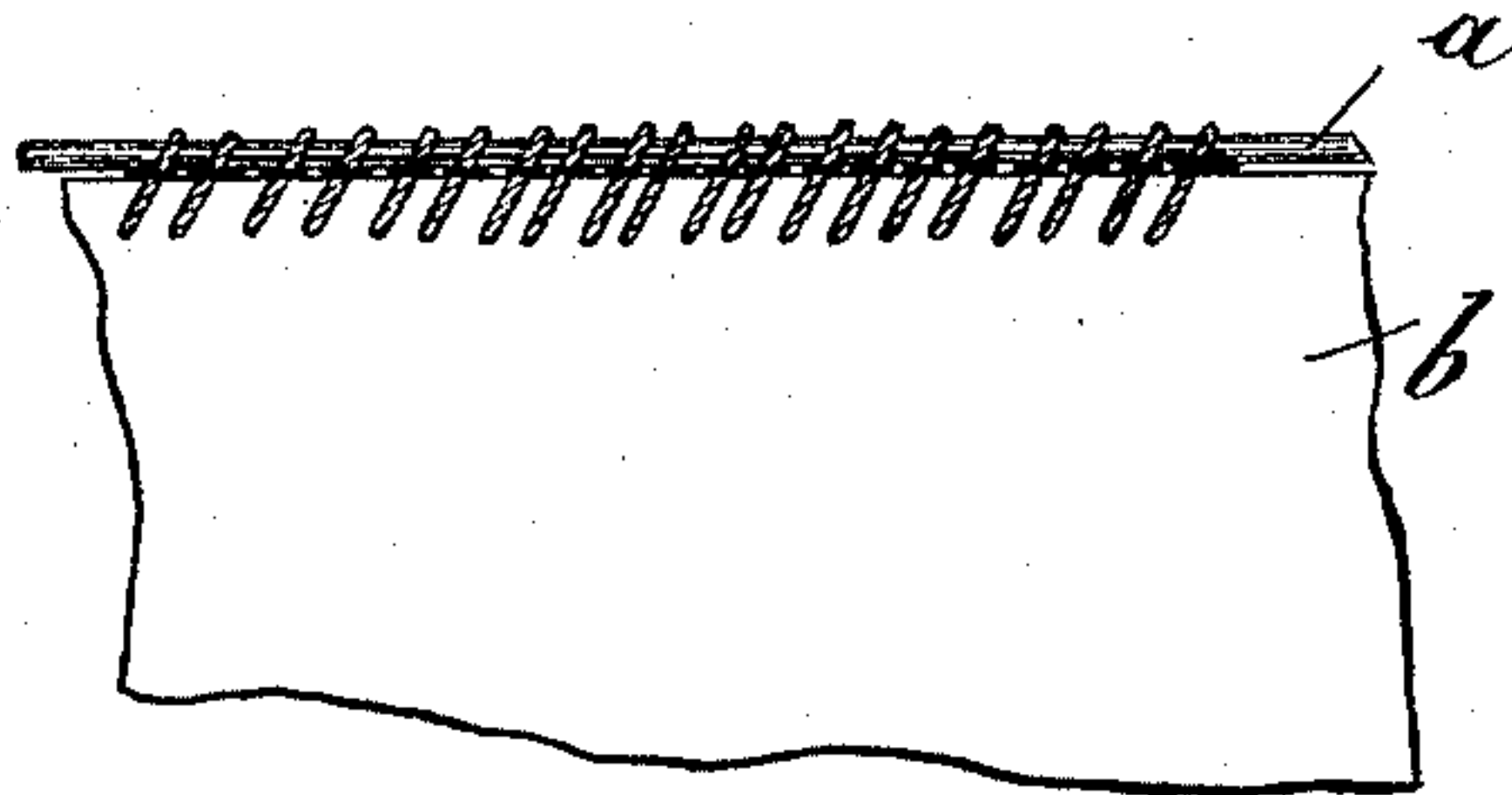


Fig. 10.

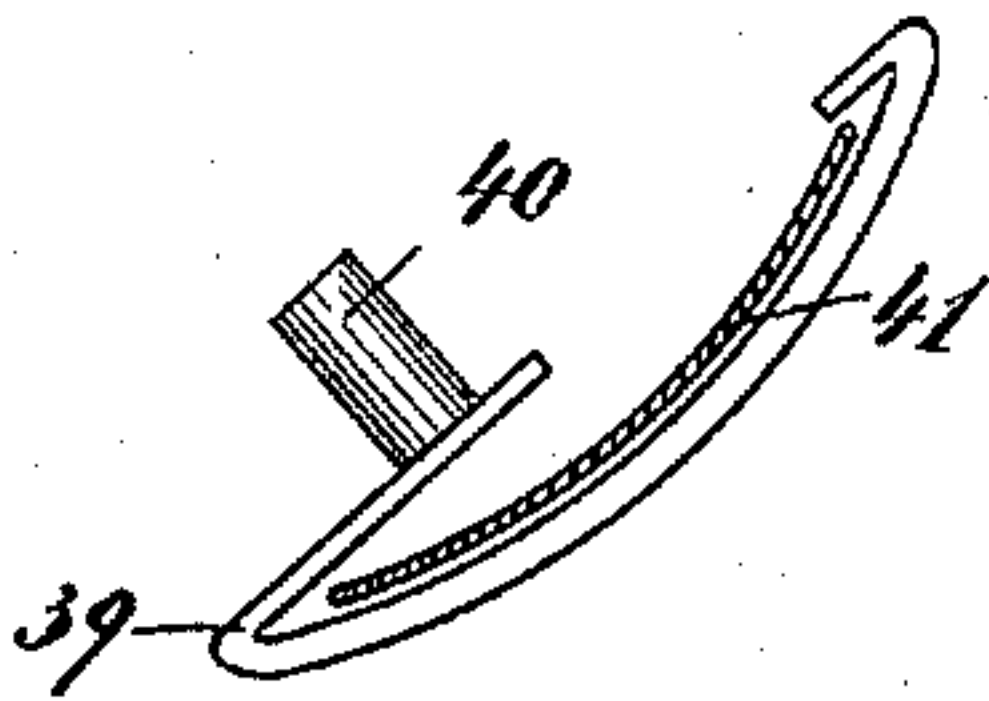


Fig. 11.

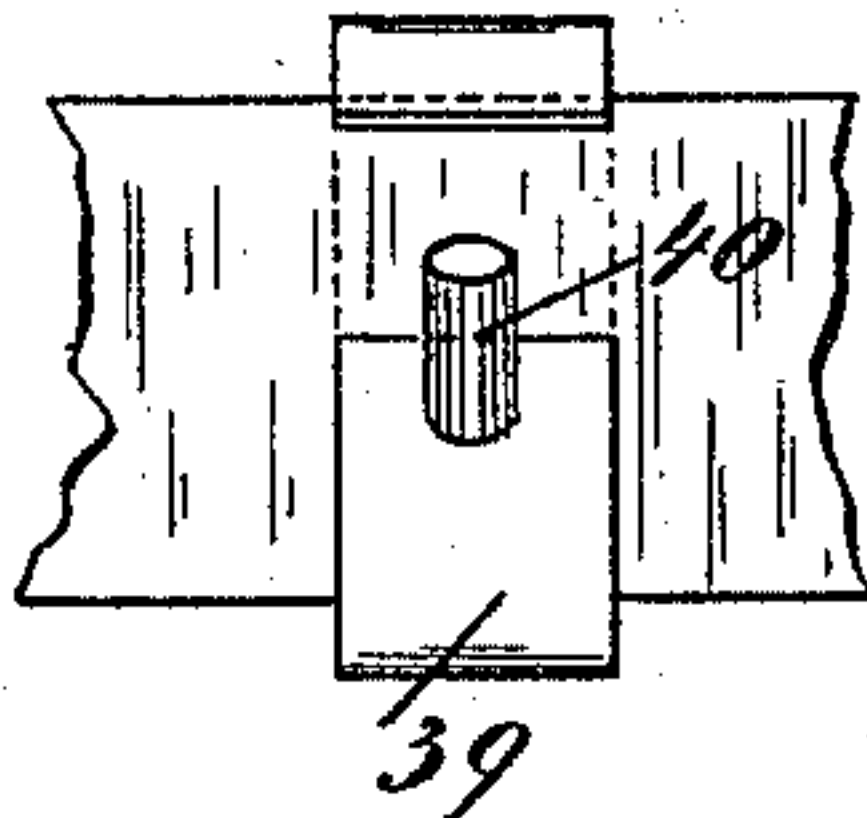


Fig. 12.

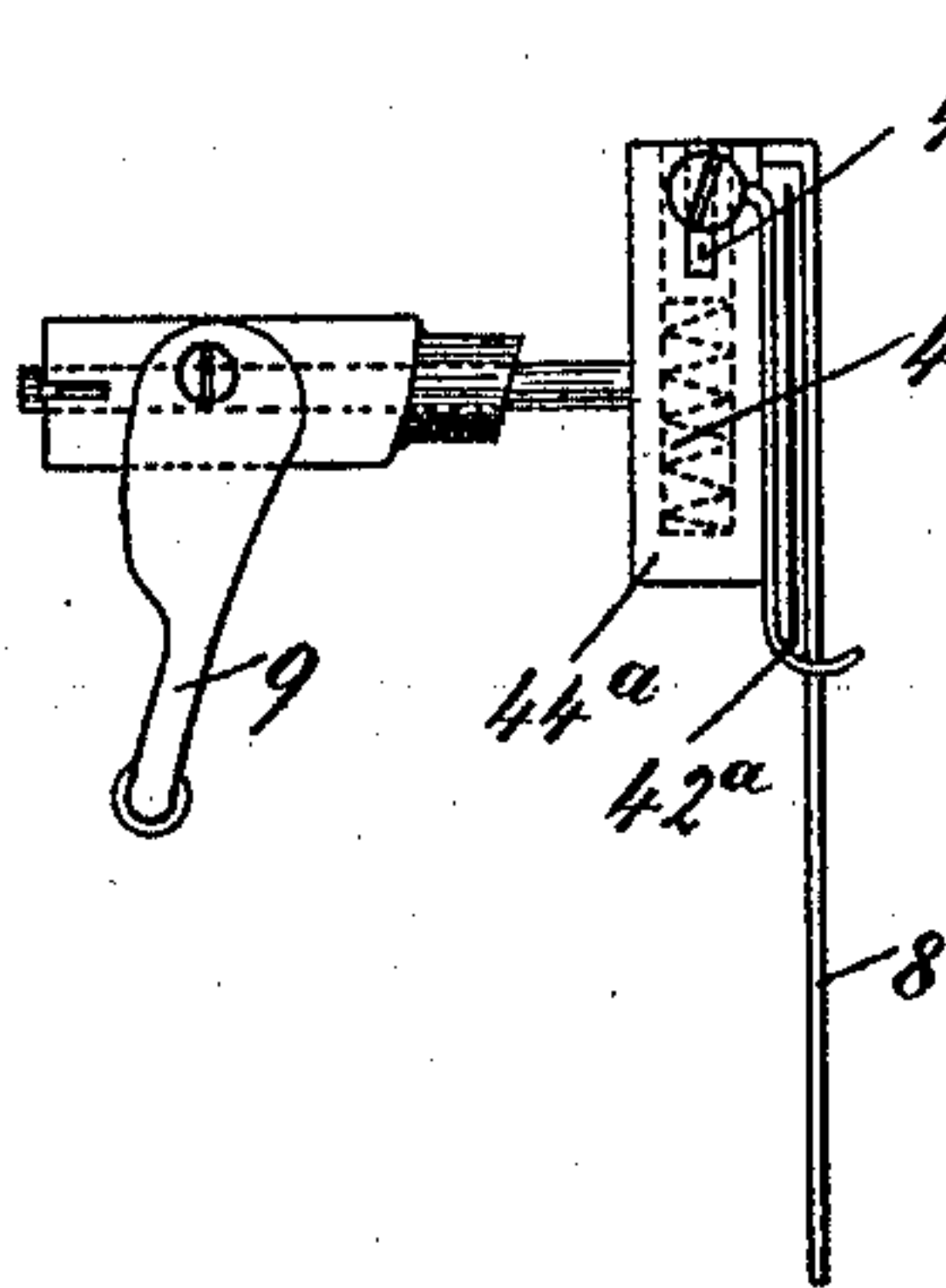
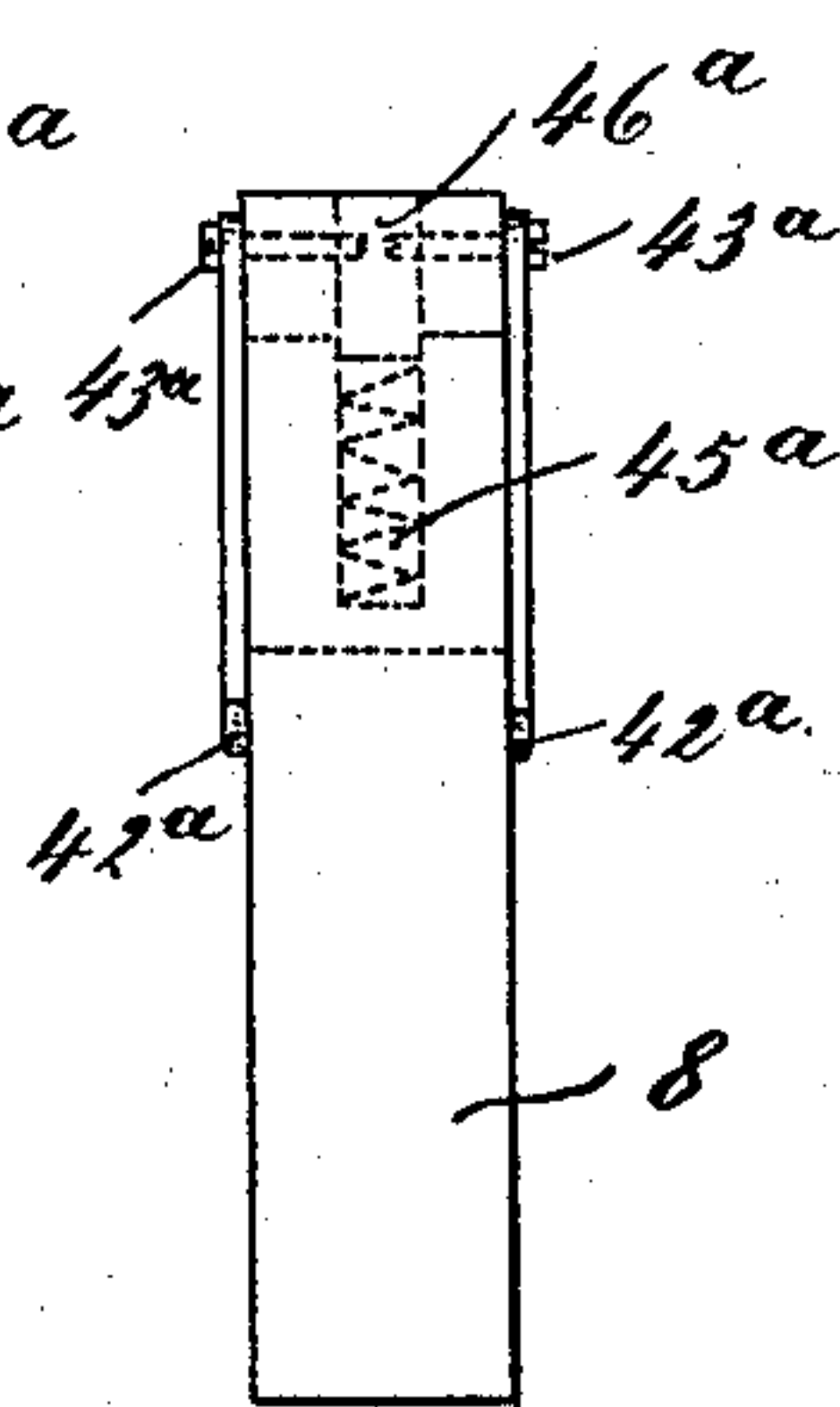


Fig. 13.



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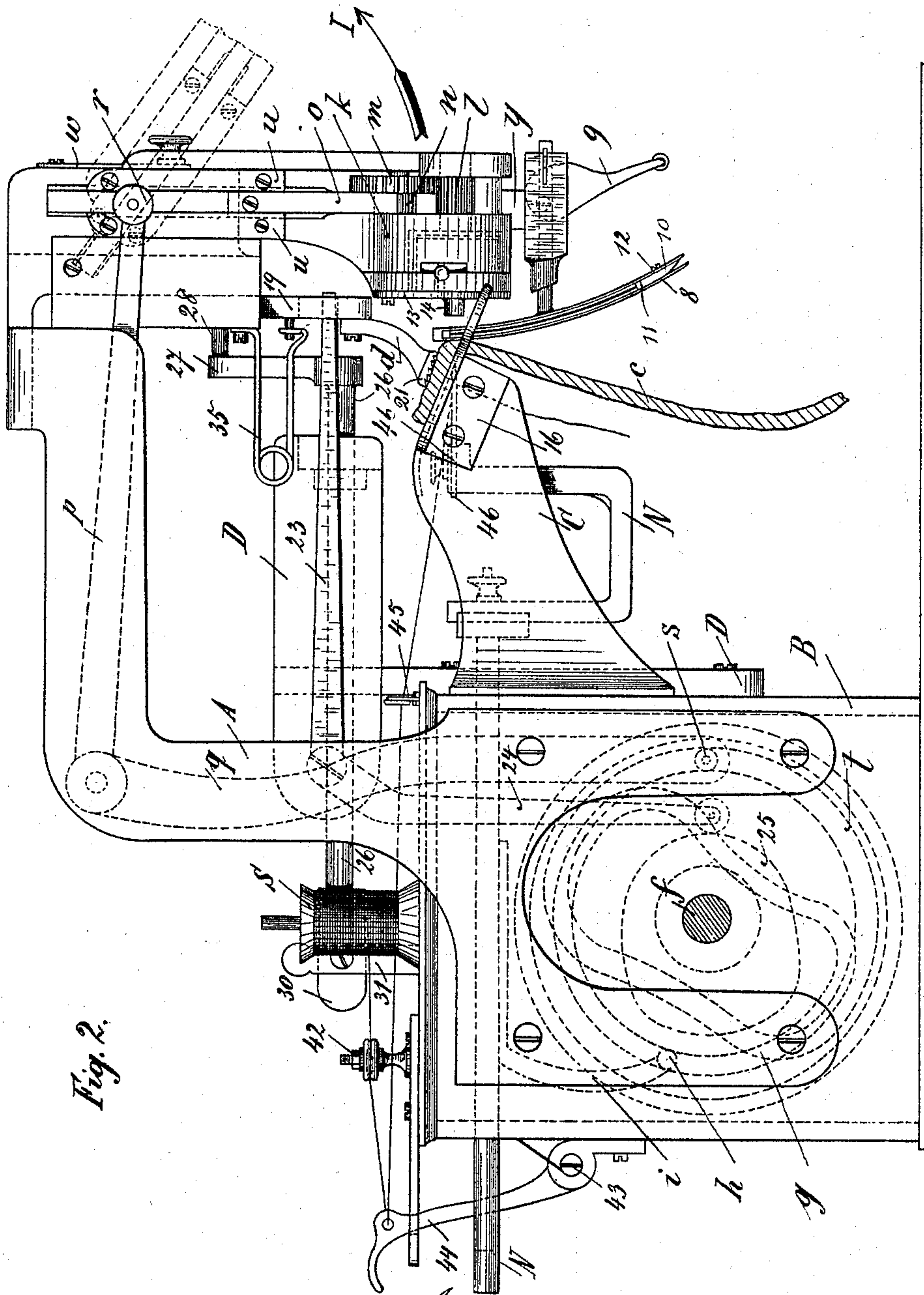


Fig. 2.

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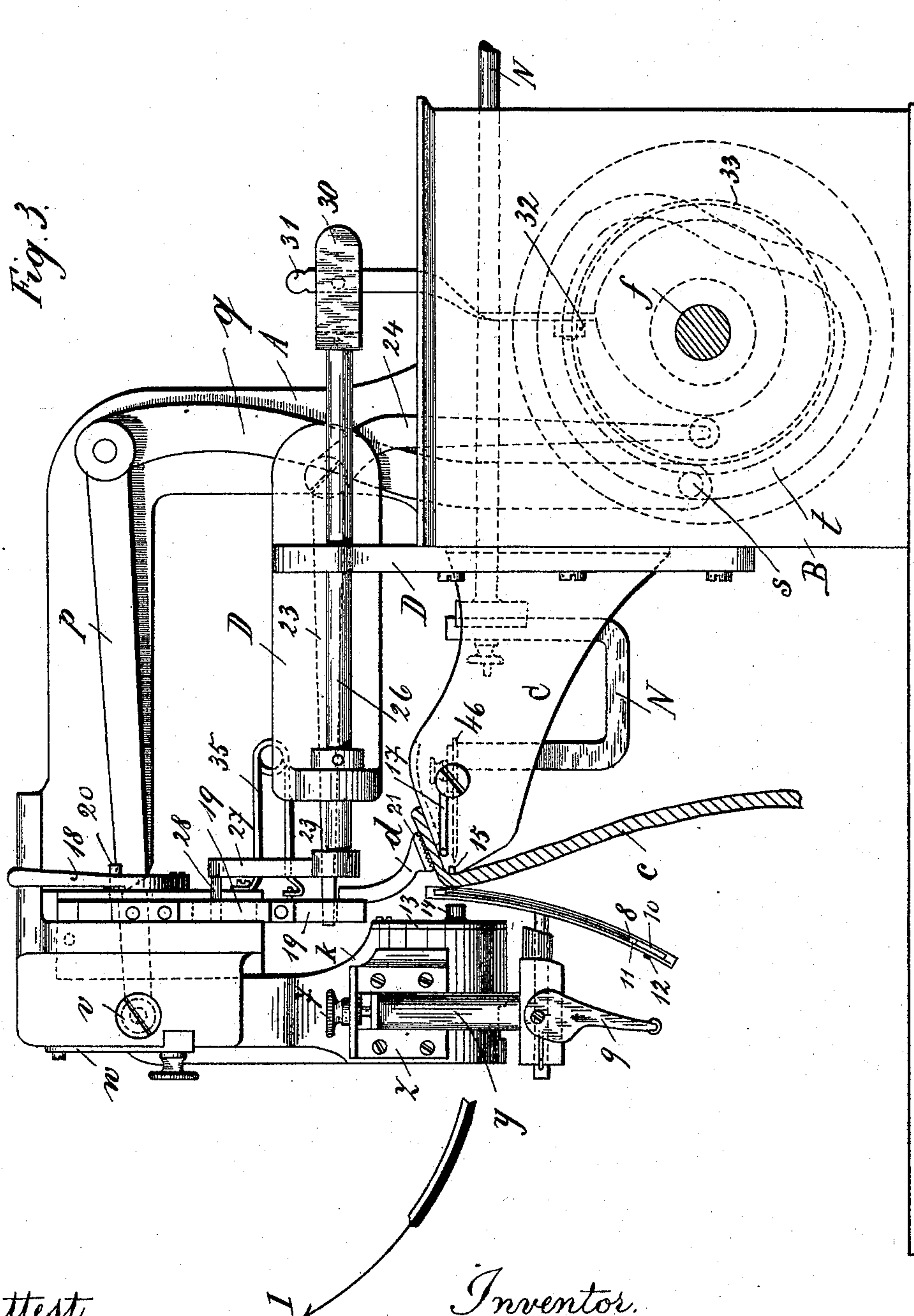
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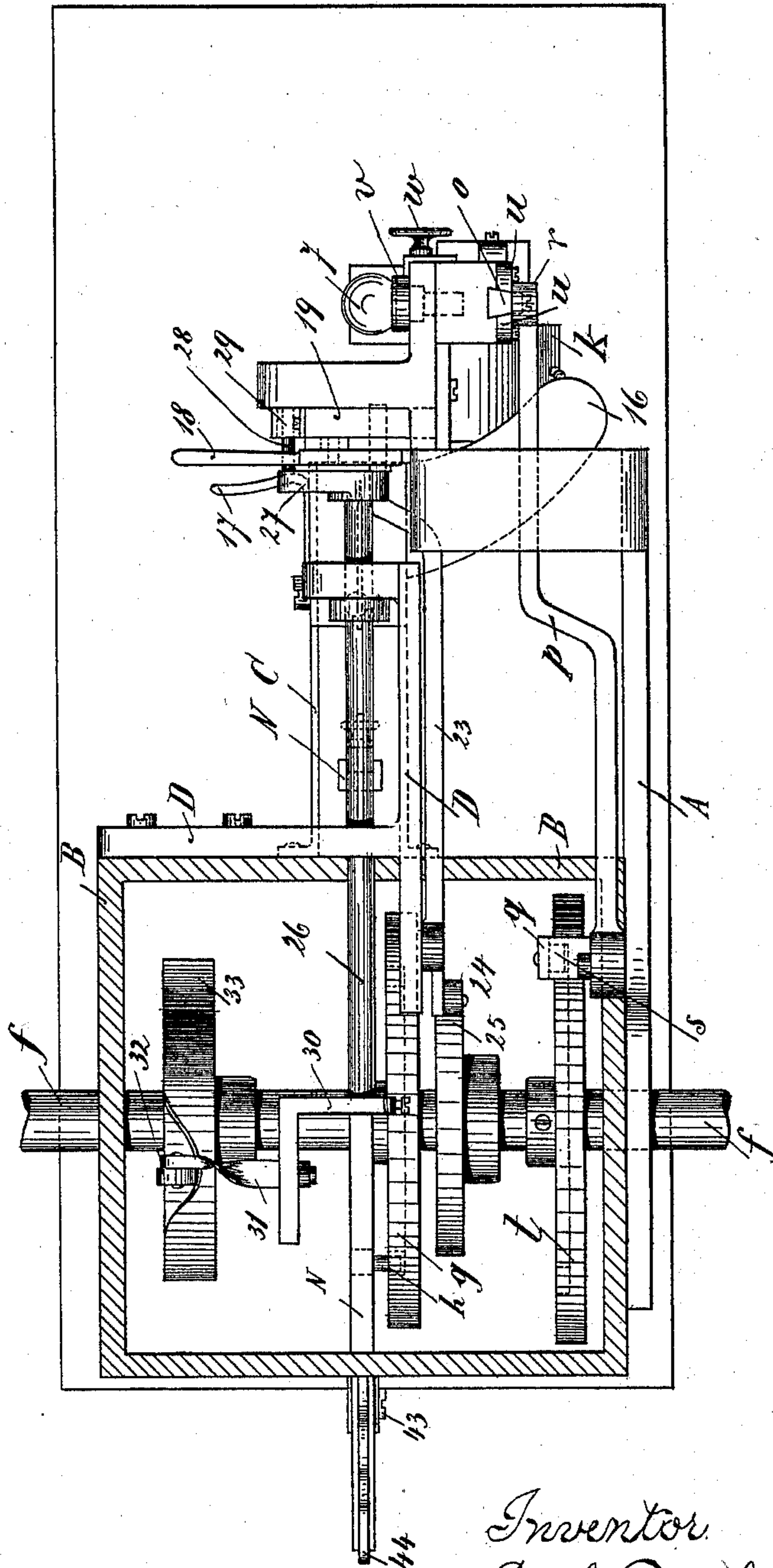
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Fig. 4.



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Fig. 5.

Fig. 7.

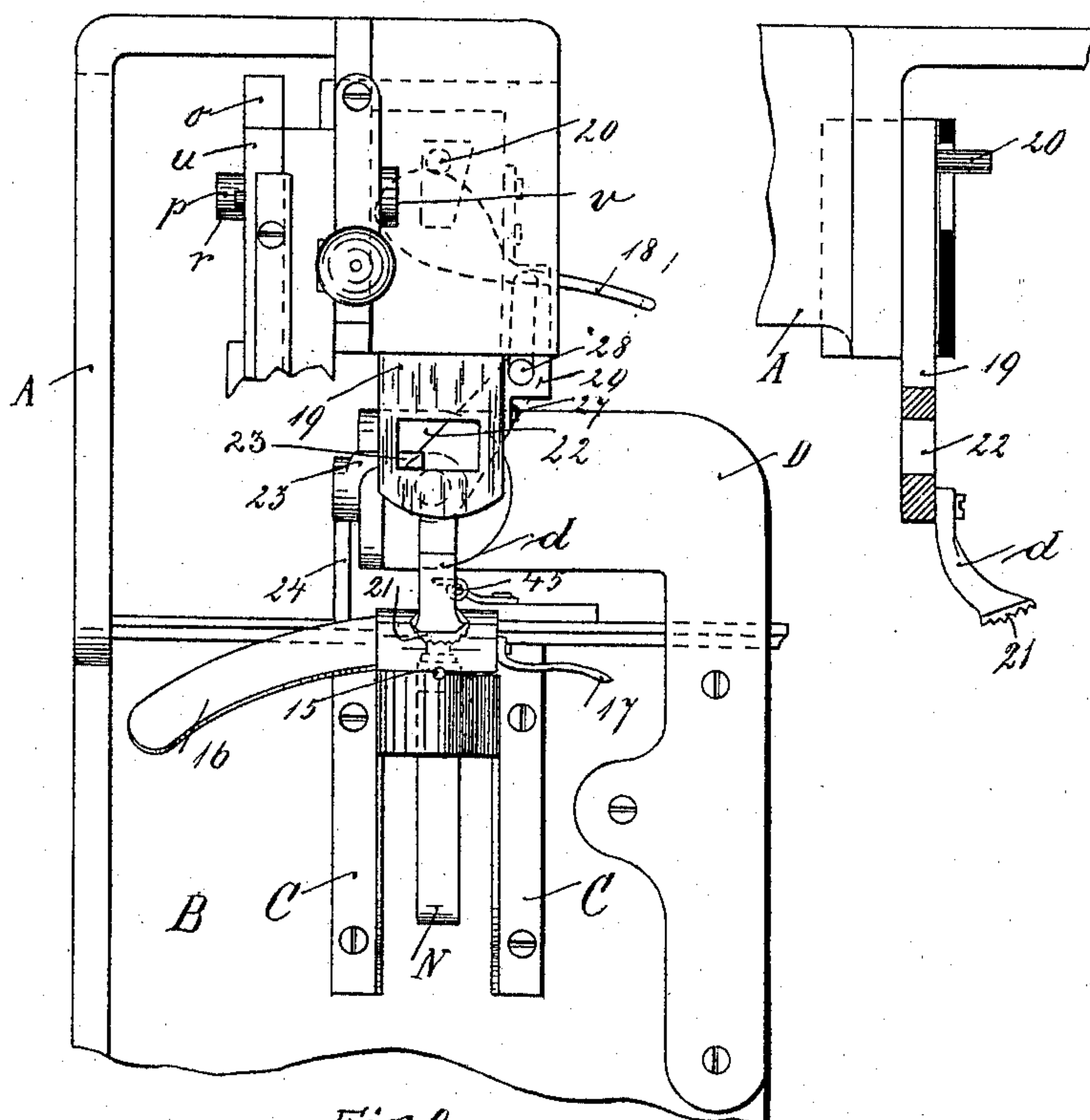
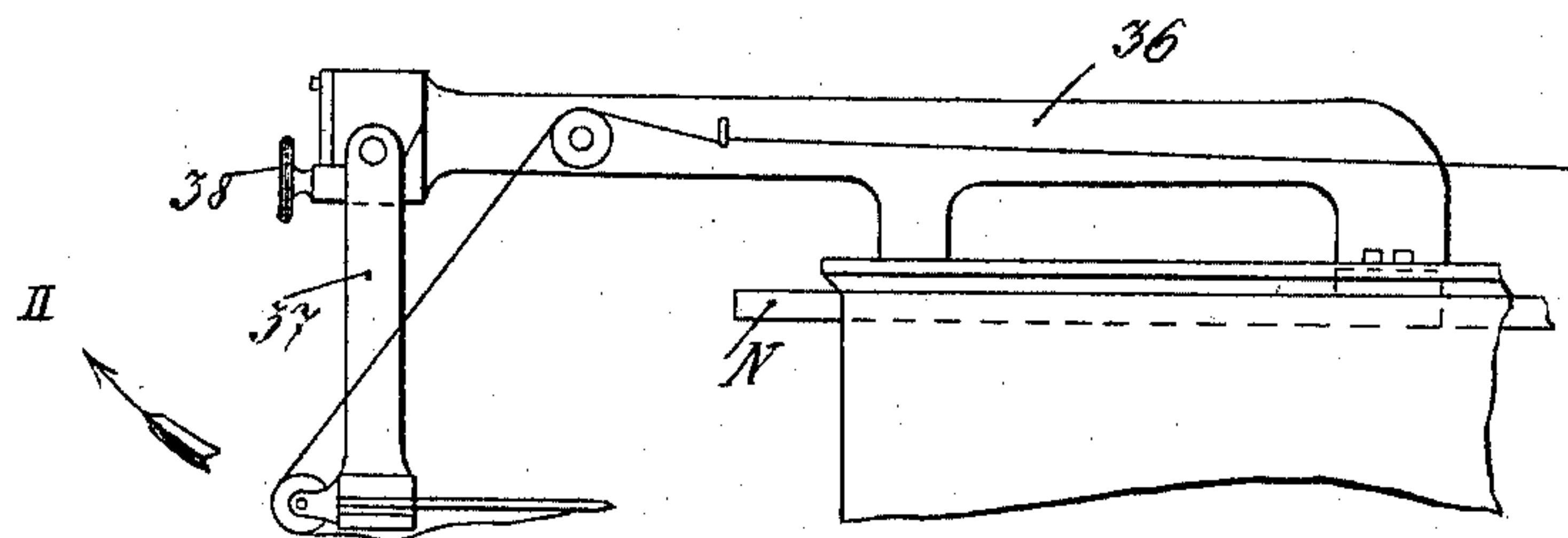


Fig. 9.



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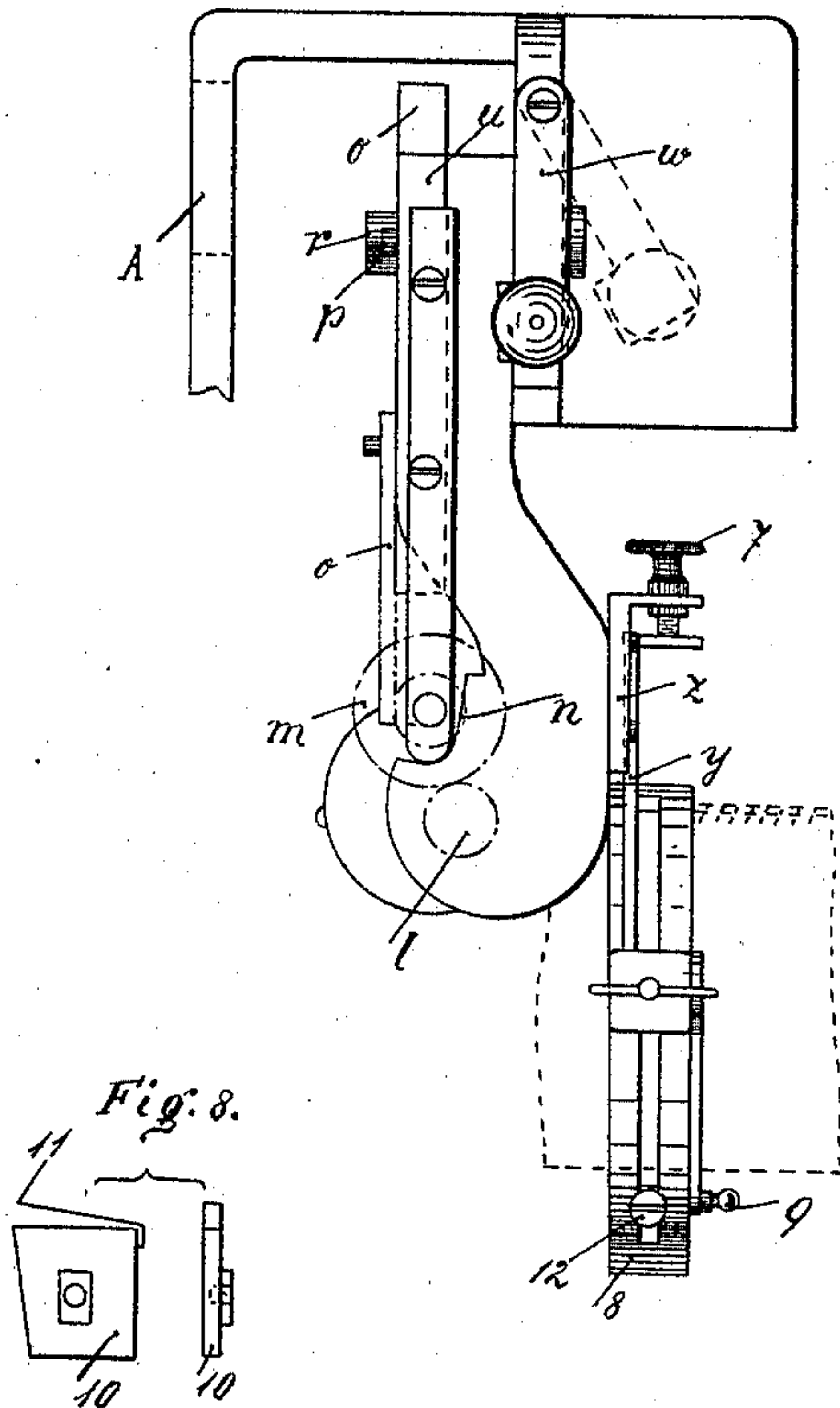
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MACHINE FOR SEWING SWEAT BANDS IN HATS.

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Fig. 6



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Fig. 14.

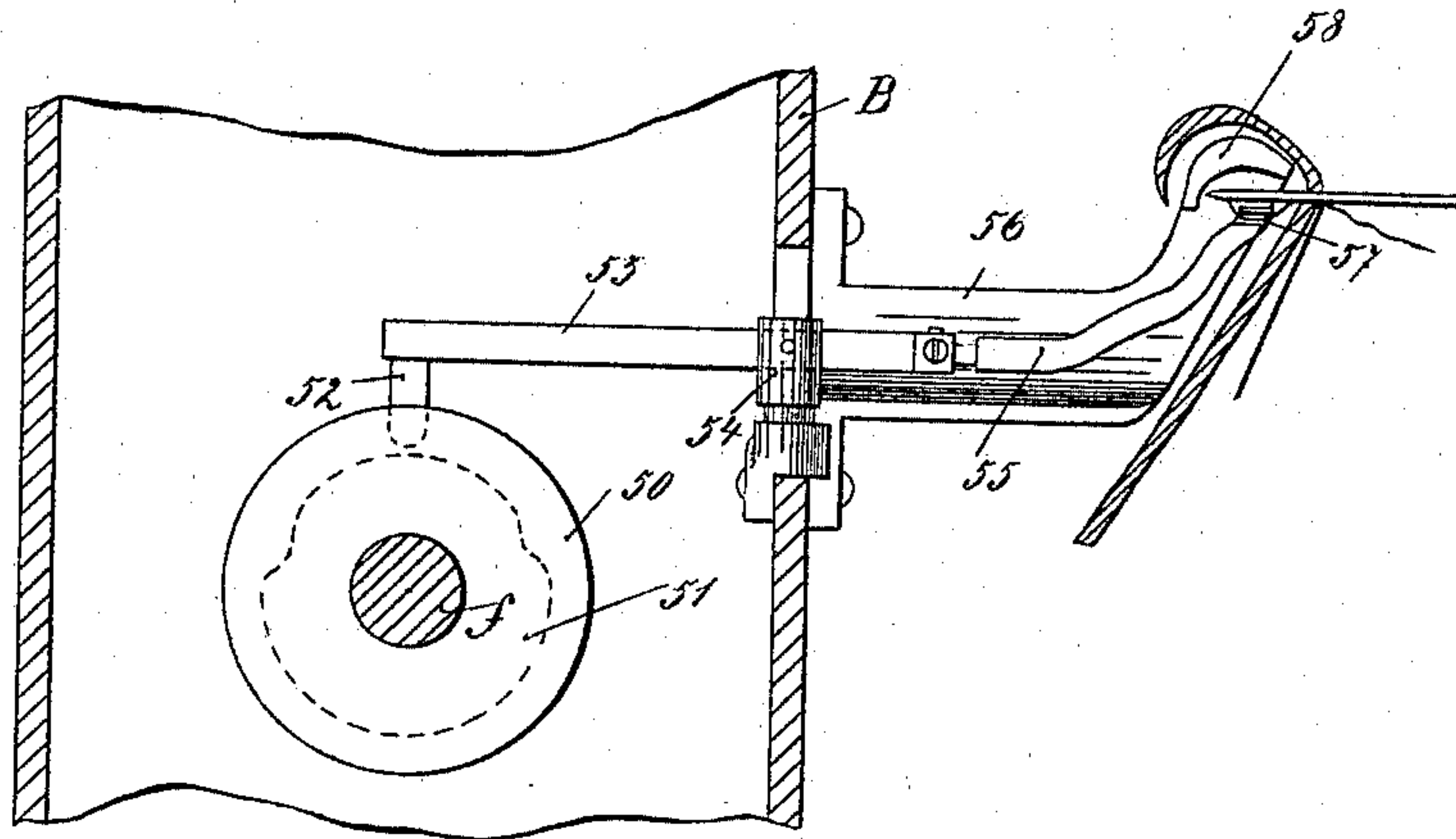


Fig. 15.

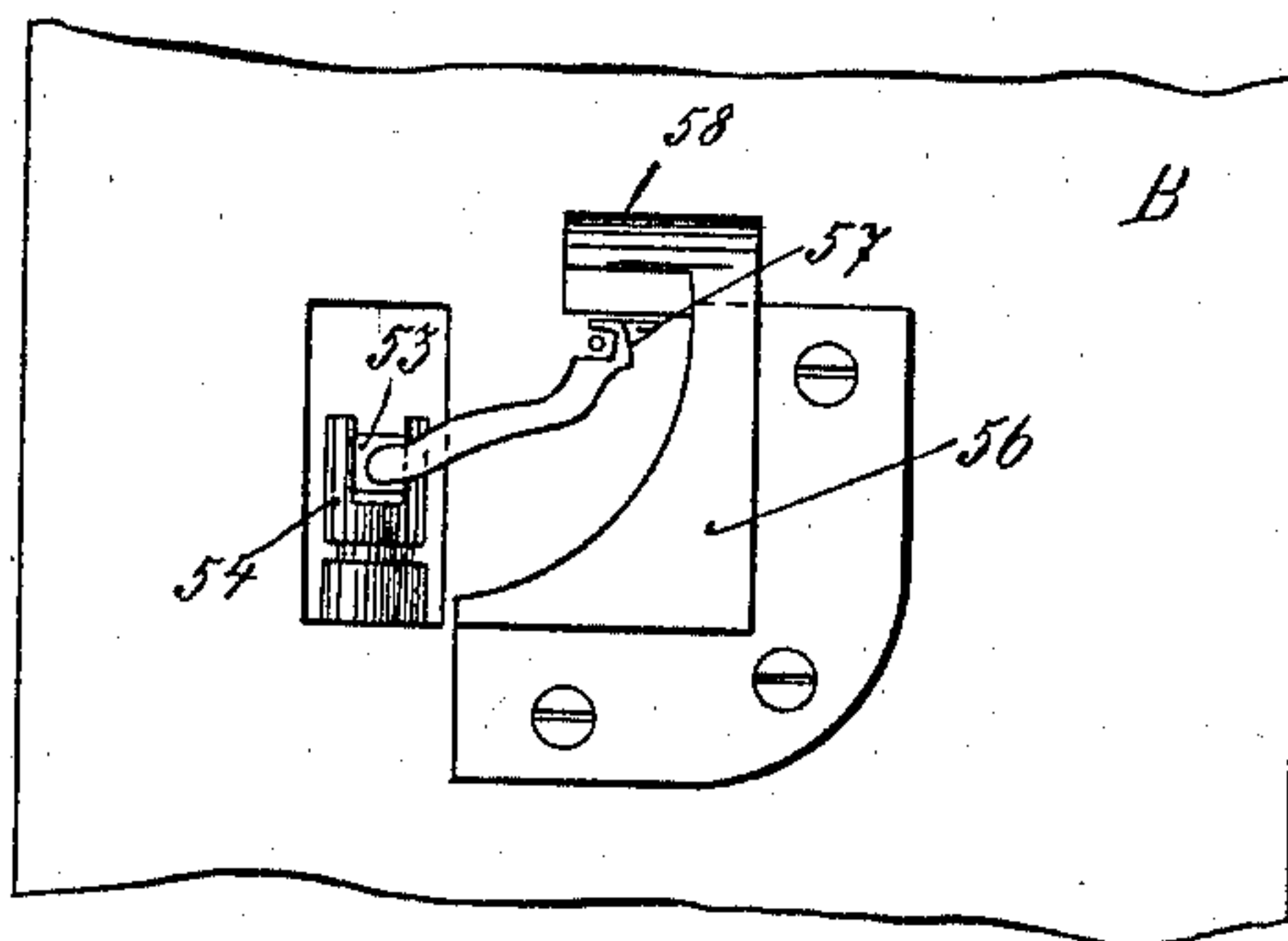
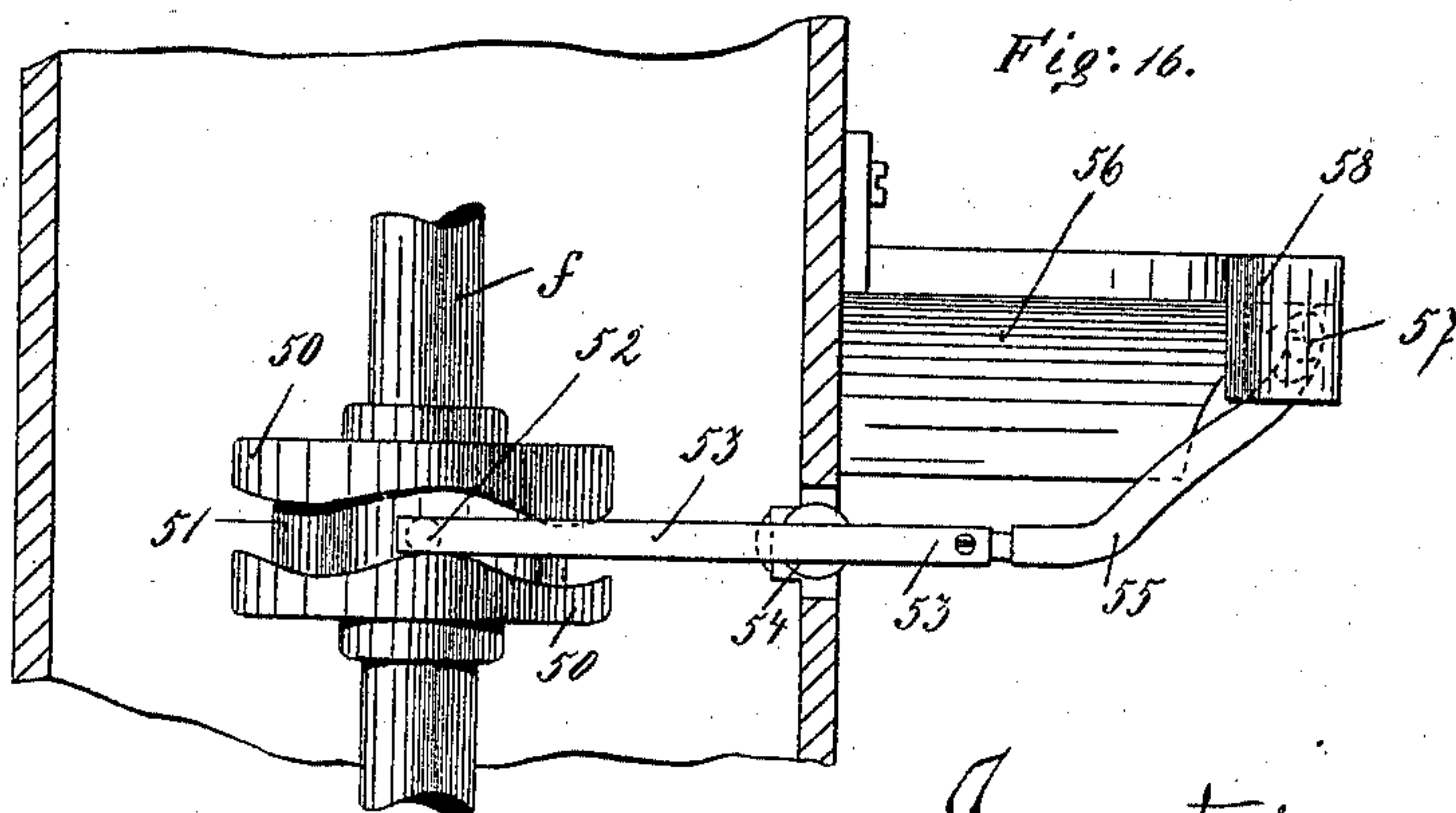


Fig. 16.



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UNITED STATES PATENT OFFICE.

CARL NECKER, OF BERLIN, GERMANY.

MACHINE FOR SEWING SWEAT-BANDS IN HATS.

SPECIFICATION forming part of Letters Patent No. 585,874, dated July 6, 1897.

Application filed May 25, 1895. Serial No. 550,683. (No model.) Patented in England March 28, 1895, No. 6,402.

To all whom it may concern:

Be it known that I, CARL NECKER, a subject of the Emperor of Germany, and a resident of the city of Berlin, in the Empire of Germany, have invented certain new and useful Improvements in Machines for Sewing Sweat-Bands or Sweat-Leathers in Hats and Similar Head-Coverings, of which the following is a specification, reference being had to the accompanying drawings.

The subject-matter of this invention is embodied in British patent No. 6,402, dated March 28, 1895.

This invention has for its object an improved machine for sewing sweat-bands or sweat-leathers to hat-brims and the like.

The peculiar characteristic of this machine consists in that the sweat-band previously stitched with a cord *a* by overcast stitching, Figure 1, is conveyed to the machine by a peculiar feed device and there sewed by means of the overcast stitching with needle and shuttle threads to the brim of the hat, which is already held fast in the machine, in such a way that the needle passes between the cord *a* and the sweat-leather *b*.

In the accompanying drawings, Fig. 1 is a view of the sweat-leather and shows the run of the needle-thread which forms with the shuttle-thread an ordinary Singer stitch on the opposite side, whereby the leather is attached to the hat. Fig. 2 is a side elevation of the machine from the left. Fig. 3 is a side elevation of the same from the right. Fig. 4 is a plan with the cover-plate removed. Fig. 5 is a partial front elevation of the machine. Fig. 6 is a front elevation of the shuttle-box. Figs. 7 and 8 are details. Fig. 9 shows a separate view of the needle-bar. Figs. 10, 11, 12, and 13 are separate views of the leather-holder, while Figs. 14, 15, and 16 show a modified form of the machine which allows of stiff hats with curved brims being sewed.

As regards the machine itself, it has, first, a sewing-needle horizontally guided and moved; secondly, a removable shuttle-box arranged in front of or behind the needle on the frame itself, which shuttle-box carries at the same time a guide device for the sweat-leather, and, thirdly, a feed device which moves the hat forward a little after each stitch.

If a hat is to be sewed by the above-mentioned machine, the hat *c*, Fig. 2, is laid on the guide-board 16 and 17 and retained in the usual manner by means of a feed presser-foot *d*. The leather-holder is then suitably moved to the left, as shown in Fig. 2, so that it rests closely on the hat. The needle then commences its usual horizontal movement, passing first through the hat, then over the leather beneath the cord and between the overcast stitching, and, bringing a suitable loop out of the shuttle-box, it then returns, the presser-foot commences to operate—that is to say, it pushes the hat a little forward—the needle again commences to sew, and the operation is repeated afresh, whereby the sweat-band is connected to the hat-body by the row of stitches passing between the overcast stitching, as shown in black lines in Fig. 1. The shuttle here employed is the ordinary ring-shuttle.

The mechanisms for the separate movements may be divided into the following sections:

I. *The device for operating the needle.*—An ordinary groove-cam *g* is arranged within the machine on a spindle *f*, in the groove of which a pin *h*, Fig. 2, travels and is connected with the needle-bar *N* by means of a stirrup *i*. By the rotation of the above-mentioned groove-cam the ordinary reciprocating movement of the needle-bar is produced.

II. *The shuttle-box.*—The shuttle-box may, as already stated, be arranged in any suitable manner. In the accompanying drawings it is shown as arranged in front of the needle and outside the machine. The annular holder for the shuttle itself is arranged inside the box *k* and carries at the rear outside of the box a small spur-wheel *l*, which engages a second spur-wheel *m*. On the spindle of the wheel *m* another wheel *n* is arranged, which is operated by means of a rack *o*. (See Figs. 2 and 6.) This latter, which works in suitable guides *u u*, is connected, by means of an eye or collar *r*, with an elbow-lever *p q*, arranged on the arm of the frame *A*. The longer arm *q* of this elbow-lever is provided toward its end with a roller *s*, which also engages in an ordinary groove-cam *t*. If then this groove-cam be moved, the elbow-lever *p*

5 *q* will make an oscillating movement and cause the rack-bar *o* to execute an up-and-down motion in the guides *u u*. This movement being conveyed to the cog-wheels *m n l*, the ordinary reciprocating movement of the ring-shuttle takes place. It may also be noted that the shuttle-box, together with the parts therein contained, is made revoluble by means of a screw stud-pivot *v*, Figs. 3 and 4, so that it is at any time possible to move the entire shuttle-box outward in the direction of the arrow *I*, it being only necessary to bring the shuttle-check or stopping device *w*, Fig. 6, into the position shown in dotted lines, whereupon the entire body of the shuttle may be revolved by hand on the pivot *v* in the direction of the arrow. The shuttle-box when thus moved out is shown in dotted lines in Fig. 2. This moving out has for its object to afford, before the hat is gripped in the machine, sufficient space to conveniently arrange the hat in a suitable position. A slide *y* is arranged on the rear part of the shuttle-box, which slide travels in guides *z z* and may be adjusted to suit various practical requirements by means of a micrometer-screw 7. The lower part of this slide *y* has an adjustable spring guide-piece 8, Figs. 3 and 6, which can be moved to the right or left by means of an eccentric lever 9. This guide-piece serves for receiving the sweat-leather and may be moved away from the hat or pressed on the same by means of the eccentric lever 9. In order that the leather may always be brought into the correct position, this guide-piece 8 is slotted and has an adjustable jaw or cheek 10, Fig. 8, underneath. Above the same a small spring 11, Fig. 8, is arranged, which has a tendency to always press the leather upward. If different widths of leather are to be sewed, the screw 12, Figs. 6 and 3, is simply slackened and pushed up the slot until the spring 11 rests again on the leather. The remaining arrangement of the shuttle-box itself is the same as in the ordinary ring-shuttle machines. The needle sews through the cover 13, which may be removed from off the box in the ordinary manner. A circular opening 14 is provided, through which the needle projects in order to be able to form a suitable loop. Fig. 6 is a front view of the shuttle-box, on reference to which the other operating parts of the same may be clearly seen.

55 *The presser-foot or feed device.*—This device has for its object to hold fast the hat inserted in the machine and after each stitch to move it a little forward. It must also have the usual arrangement for enabling it to be thrown in or out of gear by hand. A hollow arm *C* is arranged on the machine-frame *B*, which arm has at its front end an opening 15, Figs. 3 and 5, through which the needle works, and which also serves as a guide for the same. Two angle-pieces 16 and 17, Figs. 2, 3, and 4, are arranged one on each side of this arm *C*, on which angle-pieces 16

and 17 the brim of the hat rests, as shown, the hat being held down by the feed presser-foot *d*, pressed down by means of the ordinary cam-lever 18, Figs. 2 and 3. This arrangement is present in all sewing-machines (material-feeding presser-feet) and does not need to be further explained here.

The device for moving the presser-foot itself is, however, peculiarly constructed. As already hereinbefore mentioned, the presser-foot must first move the hat a little forward automatically and hold it fast during the sewing of the leather. It must thus carry out a fourfold movement—namely, an up-and-down one and also one to the left and right. For this object it is arranged as follows: A slide 19 is arranged on the frame-arm *A*, which, as may be seen in Fig. 7, carries a pin 20 and has on its under side the toothed presser-foot *d*. The pin 20 serves on the one hand as a bearing-point for the eccentric lever 18, in order to enable the entire slide 19 to be raised or lowered by hand, and on the other hand as a point of rotation for the whole slide 19. An opening 22 is arranged in the lower part of the slide 19, in which opening an elbow-lever revolubly arranged on the frame *D* engages by one of its arms 23. The second arm 24 of this elbow-lever is operated by means of a cam 25, mounted on the shaft *f*. If this cam be set in operation, the arm 23 will impart to the slide 19 an up-and-down movement. The movement sidewise—that is to say, the adjustment after each stitch—is effected in the following manner: A spindle 26 is suitably arranged on the rear part of the frame *D*, Fig. 3, which spindle has a small crank 27 on its front end, which engages by means of a pin 28 in a slot 29. The rear part on the other hand is provided with an elbow-piece 30, on which an arm 31 is attached. The latter arm carries in the usual manner at its lower end a small roller 32, which travels on a spiral cam 33, Figs. 3 and 4. By the rotation of the latter an oscillating movement is imparted to the spindle 26, and consequently the crank 27 must make the same movement, and this renders it possible for the slide 19, with the toothed conveyer 21, to make a suitable movement to the right or left corresponding to Fig. 5. The pressing down of the presser-foot may be accelerated by means of a spring 35, which rests partly on the frame-arm *A* and partly on the bar 19. As regards the working of the machine, this may be explained as follows: First, with reference to the feed of the needle-thread, the needle-thread is fed from the bobbin *S*, Fig. 2, through an ordinary tension device 42, to a lever 44, revoluble on a pin 43, and which is subjected to the pressure of a spring, and from there by means of a thread-guide 45 to the eye of the needle 46. The above-mentioned lever 44 is passed through the slotted needle-bar *N*, so that on the movement of the needle-bar the lever is carried with it, in order to loosen or

tighten in this manner the sewing-thread according as the needle-thread is required.

If the sweat-leather is to be stitched into a hat, the whole shuttle-box is first turned or moved outward in the direction of the arrow I and the hat is then placed in the correct position on the angle-pieces 16 and 17. The presser-foot is then pressed down in the well-known manner by means of the eccentric lever 18, Fig. 3, so that it rests firmly on the arm C, its bearing on this arm being assisted by the pressure of a spring 35, Fig. 3. The shuttle-box is then returned to its original position, the shuttle check device *w*, Fig. 6, being again pushed forward. A suitable piece of leather, with the seam upward, Fig. 6, is then inserted in the leather-guiding device or holder and pressed on the hat by means of the eccentric lever 9 and the sewing on may be commenced. After the hat has been stitched the shuttle check or stop device *w* is again pushed back, the shuttle-box moved in the usual manner in the direction of arrow I, the presser-foot raised, and the hat may then be conveniently lifted out.

Fig. 9 shows a separate form of construction of the needle-bar N, such as may be employed if the shuttle-box be situated behind the sewing-needle or on the machine-frame. The needle-bar N has an arm 36, which carries the actual needle-bar 37 at its front end, the latter being movable on a hinge and may be prevented from falling back by means of an ordinary check or stop device 38.

If while placing the hat in the machine it be desired to push back the needle, it is only necessary to push away the check device 38 from the needle-bar N and to turn it in the direction of the arrow II, so that in this manner a free space is afforded for inserting the hat.

The well-known reciprocating movement of the needle-bar itself is produced in the ordinary manner.

Two separate forms of construction of the leather-holder are shown in Figs. 10, 11, 12, and 13. The one shown in Figs. 10 and 11 consists of a peculiarly-bent piece of sheet metal 39, which may be screwed into the carrying-arm by means of a pin 40. In the inside of this sheet-metal piece the sweat-band 41 rests. It is evident that various-sized holders must be employed for the various widths of leather, and for this reason these holders must be removable.

The leather-holders shown in Figs. 12 and 13 consist of a slotted holder or case in which a clamp 46^a, standing under the pressure of a spring 45^a, may be adjusted. This jaw projects by means of the screw 43^a to the outside of the slot of the holder. Two curved arms 42^a are arranged on the projecting screws, which arms serve for receiving the sweat-leather. The arms 42^a are always held up by the pressure of the spring 45^a and thus the leather is always kept in the proper position. The sheet-metal guide-piece 8 is arranged as already hereinbefore mentioned.

It is evident from the preceding that only such hats as have a soft brim can be sewed or stitched with the hereinbefore-described machine. The following combination is employed for stitching hats with stiff curled brims—such, for instance, as "silk" hats.

A bracket 56 is arranged on the machine-frame B, Figs. 14 to 16, the upper part of which bracket has a round head 58, on which the brim of the hat is placed. As regards the sewing devices employed, in this case the needle is placed outside the machine-frame somewhat, as shown in Fig. 9. Instead of the shuttle an ordinary looper 55 is employed, which makes an up-and-down and a right-and-left movement. This movement is obtained by means of a double cam 50 and 51, arranged on the driving-shaft *f*, which cam imparts an up-and-down movement to the lever mechanism 53 54 and also to the looper 55 by means of the cam 51, on which a pin 52 travels, while the spiral cam 50 causes the above-mentioned lever mechanism and looper to oscillate to the left and right. When being stitched, the hat is first placed with its brim on the head 58 of the bracket 56. After the needle has passed through the hat the looper makes a small movement to the left—that is, as far as the needle—at the same time that it moves with its point 57 downward, thus taking a loop from the eye of the needle. After the point 57 of the looper 56 has caught a loop the presser-foot commences its action and pushes the hat forward in the usual way to the length of a stitch. The looper then moves a small way upward, holding the loop so that the needle at the next stitch engages the loop held by the looper and so forms the ordinary chain-stitch. The looper then moves downward, and the needle moves out of the hat, and the operation commences afresh.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. A machine for sewing sweat-bands to hat-bodies comprising a pendent pivoted shuttle-box carrying an annular holder, a spur-wheel on the holder, a second spur-wheel meshing with the first-named spur-wheel, a third spur-wheel fastened on the spindle carrying the second spur-wheel, the rack-guides secured to the shuttle-box, the rack sliding between the rack-guides and meshing with the third spur-wheel, an elbow-lever connected at one end with the rack, a groove-cam with which the other end of the elbow-lever is connected, means for supporting a hat-body, means for guiding and holding a sweat-band, a reciprocating needle-bar, and suitable operating mechanism; substantially as described.

2. A machine for sewing sweat-bands to hat-bodies comprising a hollow arm, the guide-bars secured to the hollow arm for supporting a hat-body, a feed device consisting of a slide formed with an opening at its lower end, a slot at one side thereof, a laterally-extending pin in the upper portion, and a presser-foot

attached to said slide, an eccentric lever upon
which the pin is adapted to bear; the elbow-
lever having an arm extending into the open-
ing, a spindle having a small crank provided
5 with a pin working in the slot, and suitable
operating mechanism; substantially as de-
scribed.

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

CARL NECKER.

Witnesses:

PAUL SCHULZ,
ANTON LIPPERT.