

No. 737,122.

PATENTED AUG. 25, 1903.

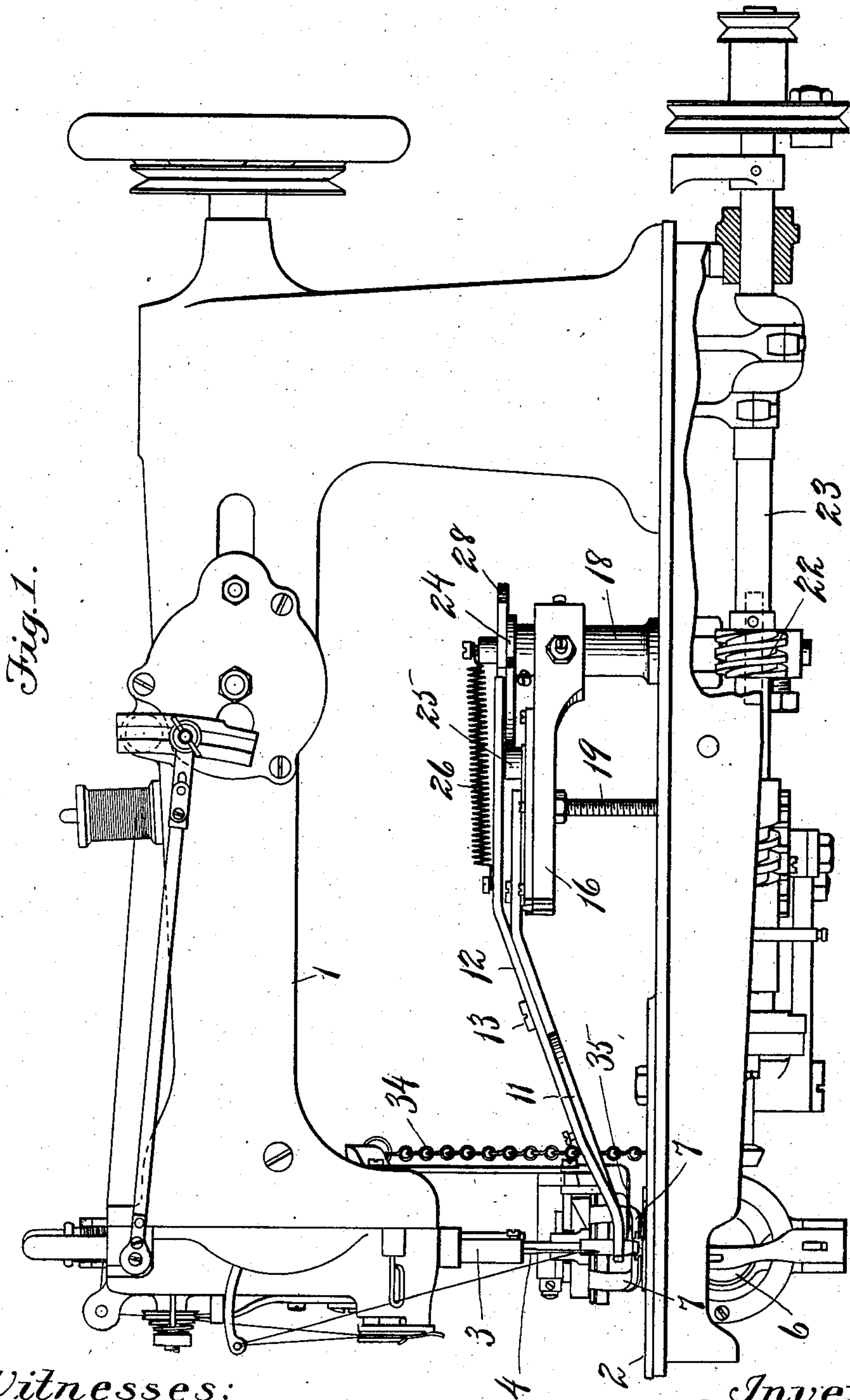
R. L. LYONS.

THREAD CUTTING MECHANISM FOR SEWING MACHINES.

APPLICATION FILED NOV. 14, 1901.

NO MODEL.

4 SHEETS—SHEET 1.



Witnesses:
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George Pezzetti

Inventor:
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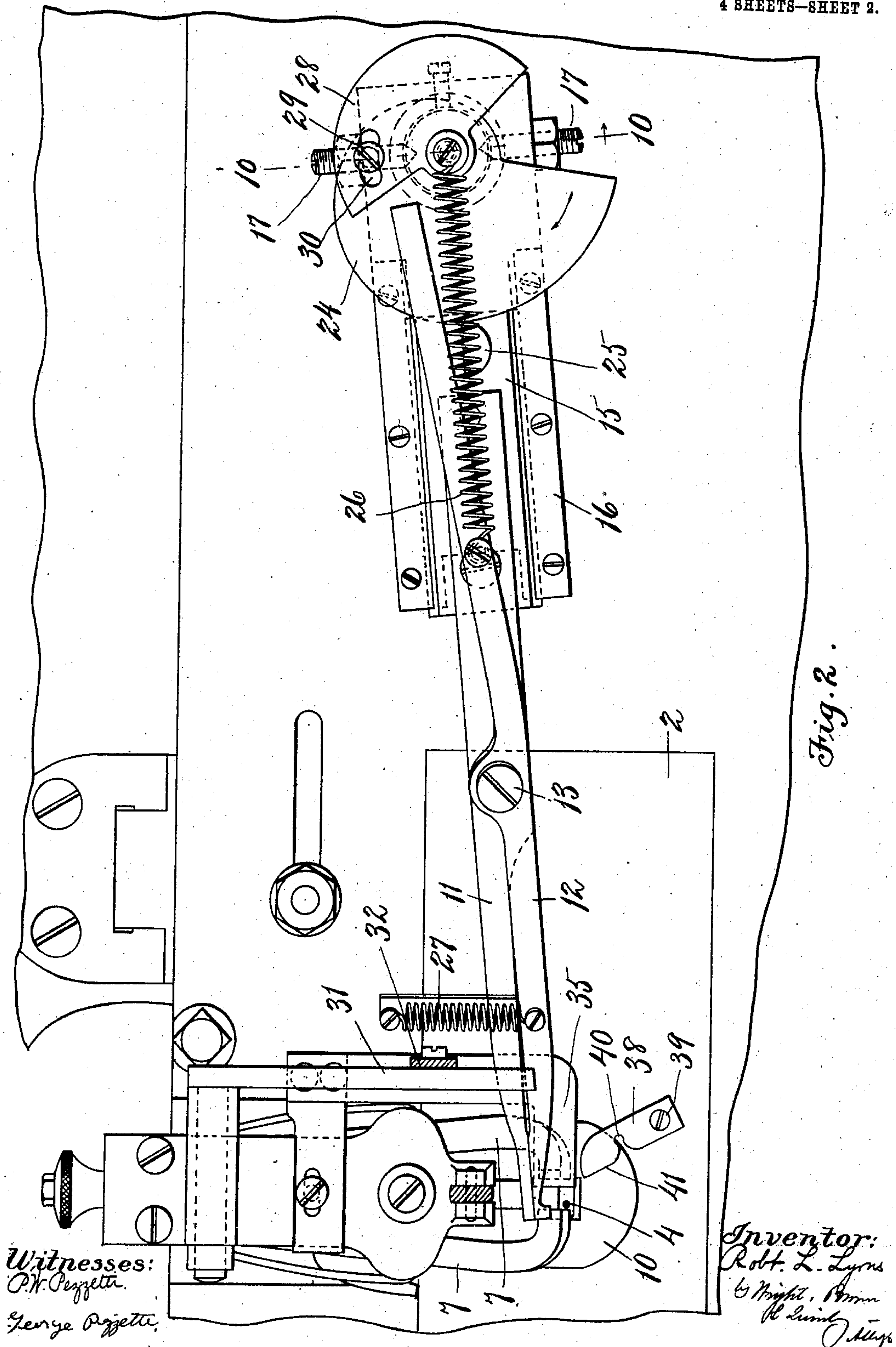
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NO MODEL.

4 SHEETS--SHEET 2.



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4 SHEETS—SHEET 3.

Fig. 3.

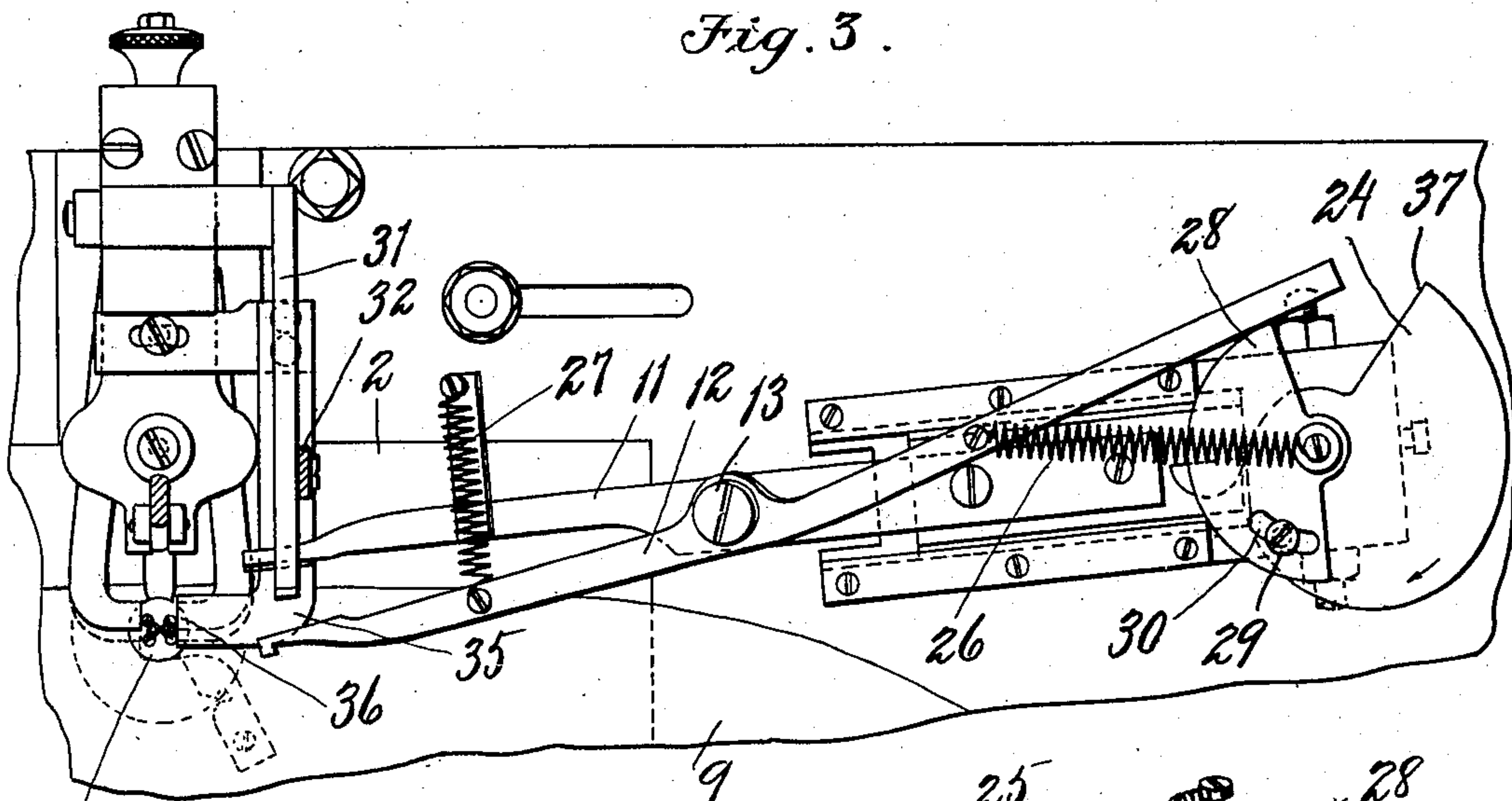


Fig. 4.

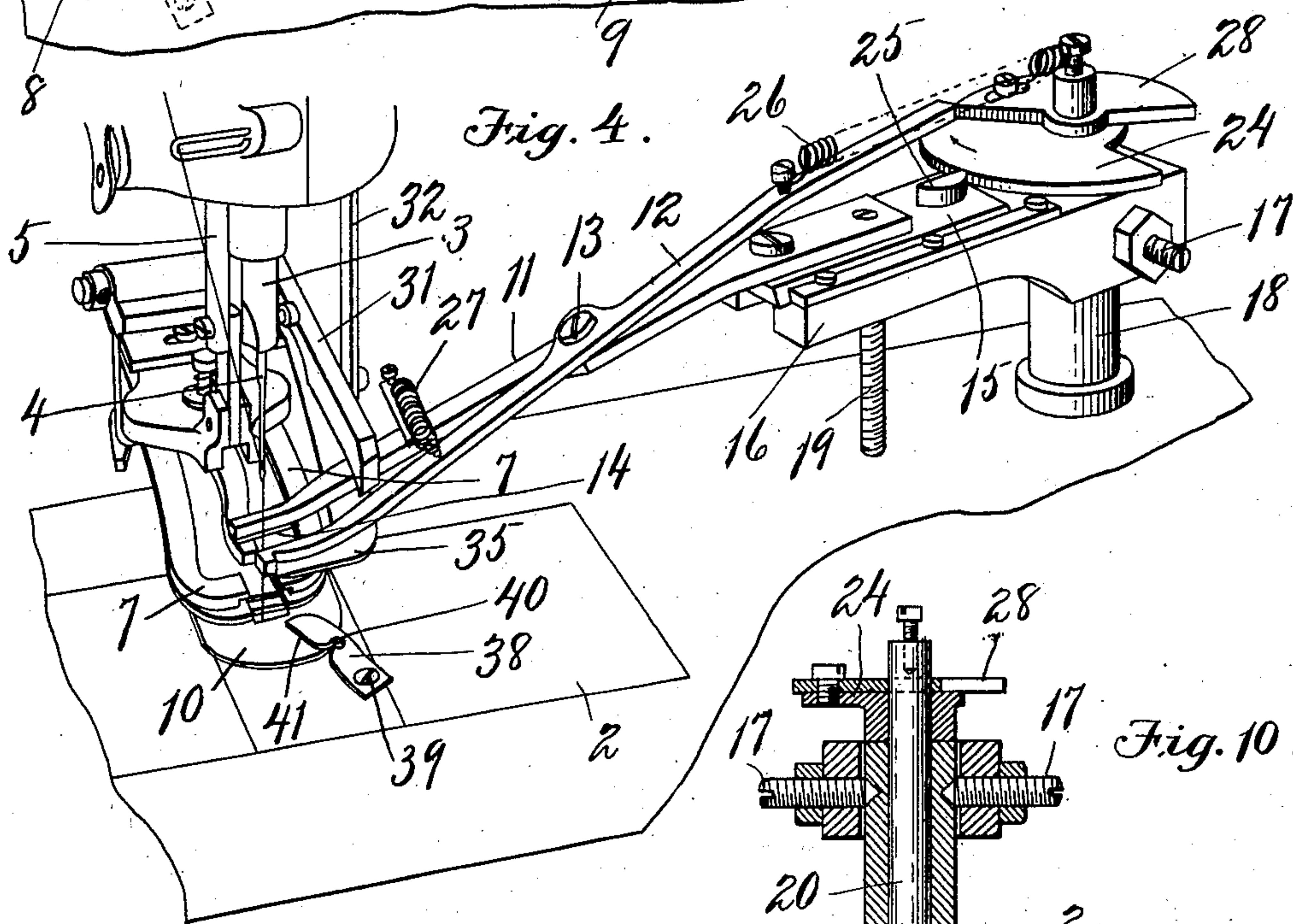
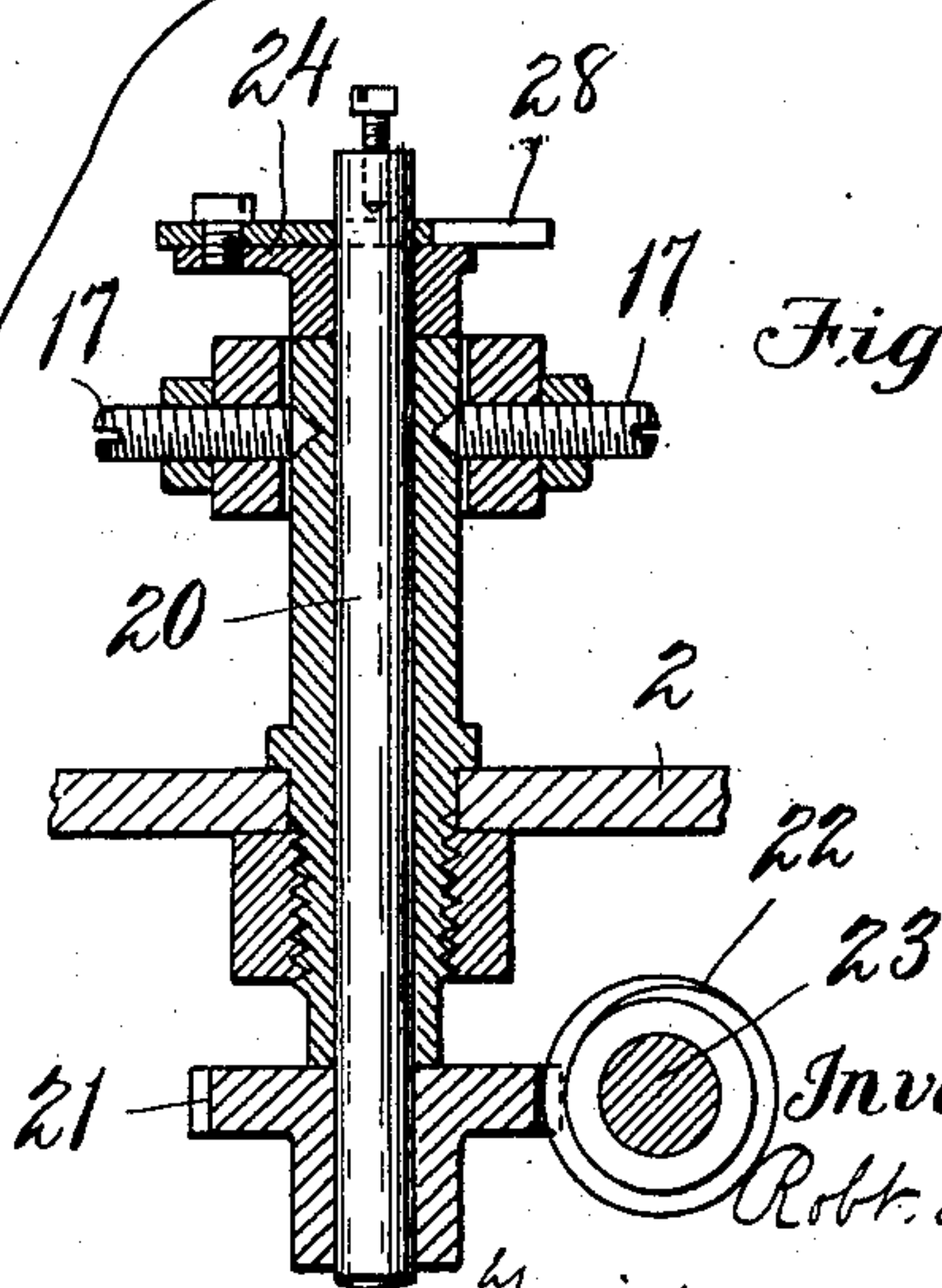


Fig. 10.



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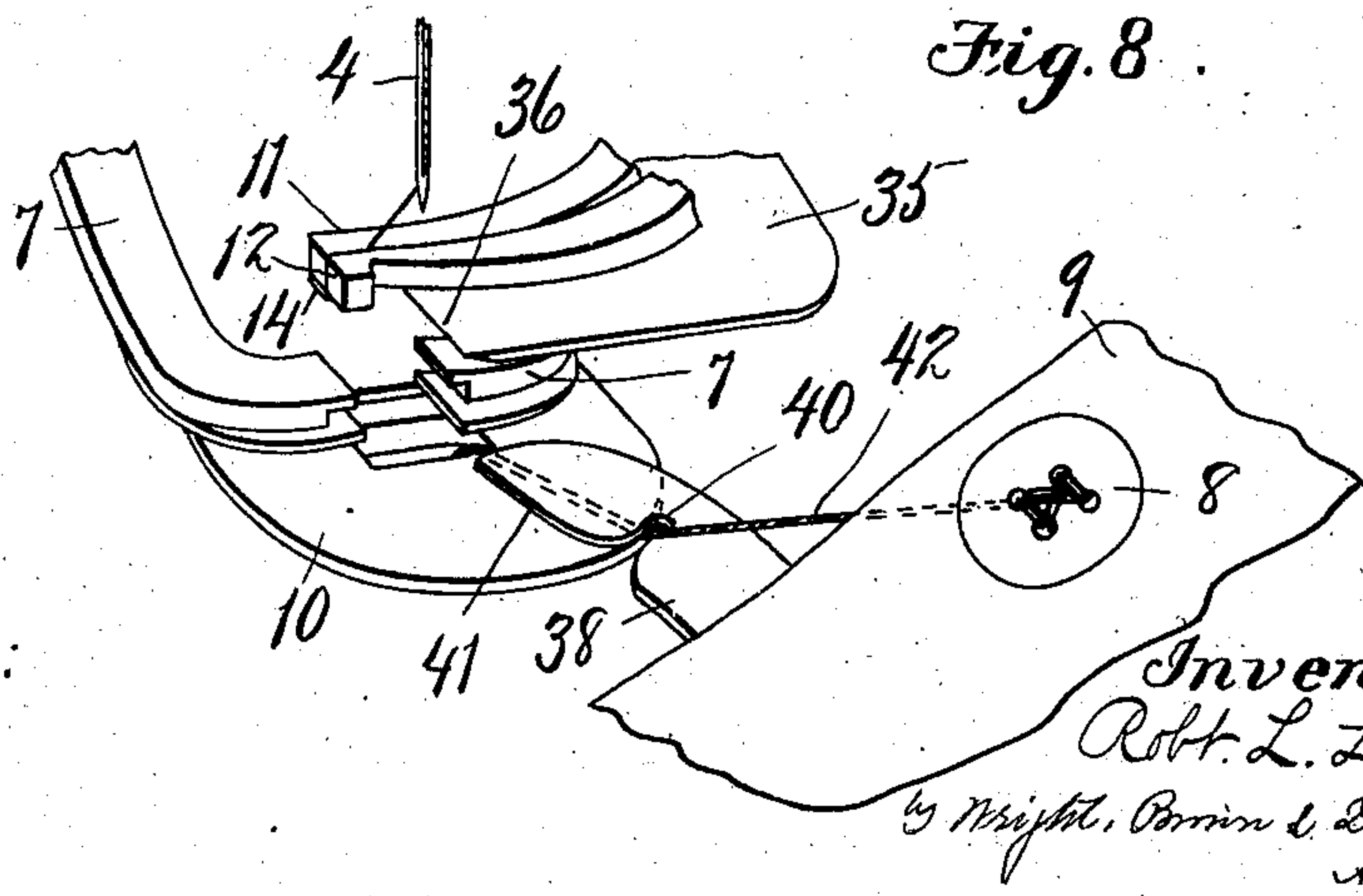
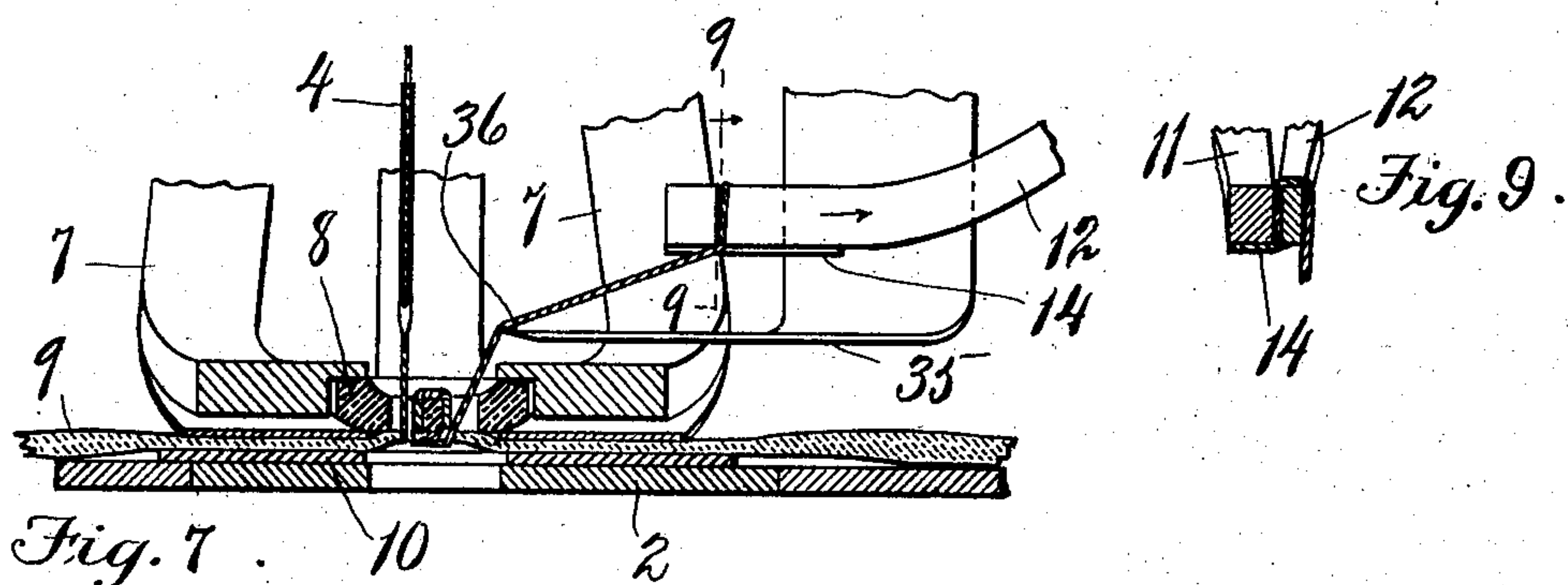
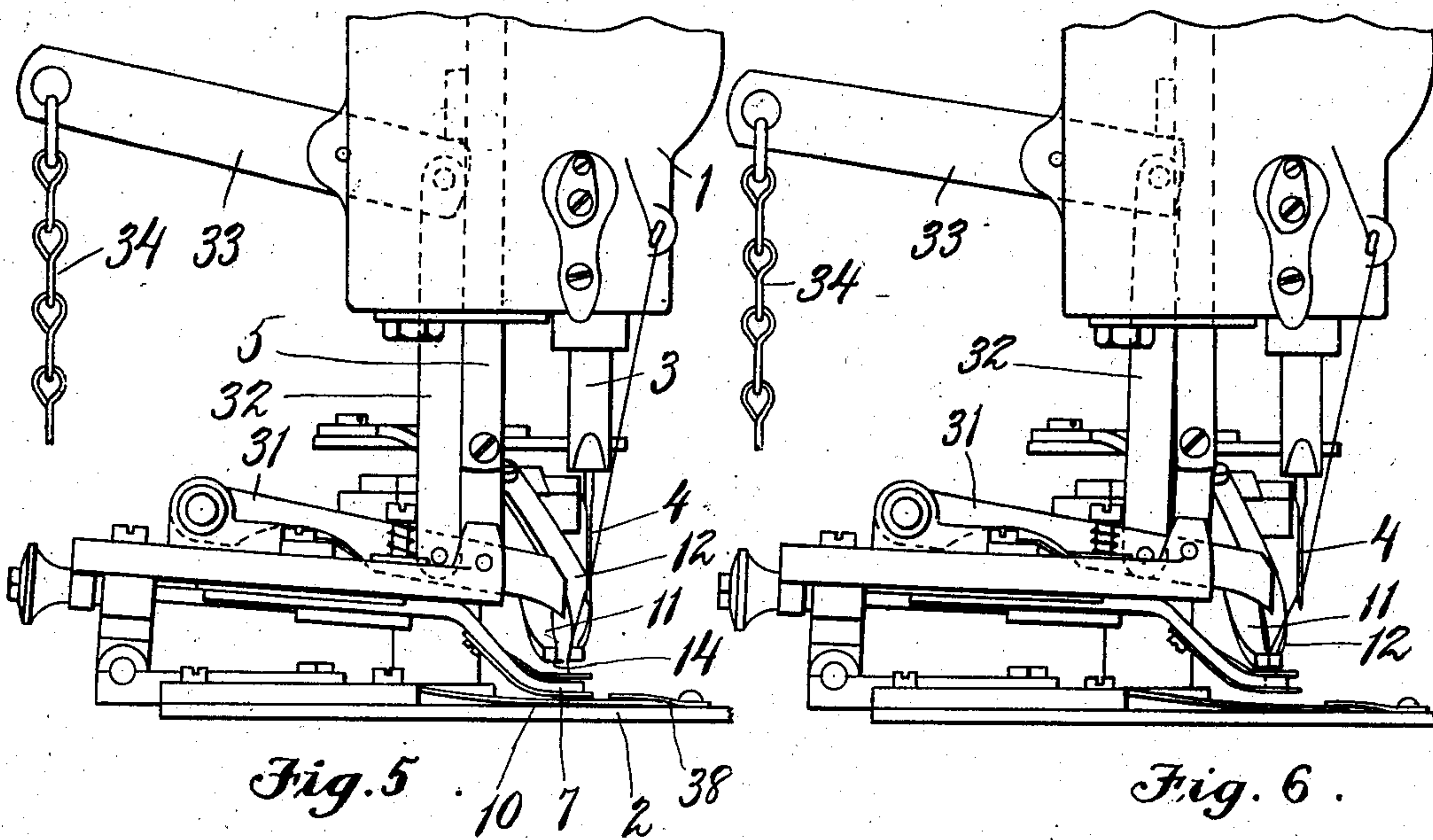
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APPLICATION FILED NOV. 14, 1901.

NO MODEL.

4 SHEETS—SHEET 4.



Witnesses:

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UNITED STATES PATENT OFFICE.

ROBERT L. LYONS, OF BOSTON, MASSACHUSETTS.

THREAD-CUTTING MECHANISM FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 737,122, dated August 25, 1903.

Application filed November 14, 1901. Serial No. 82,234. (No model.)

To all whom it may concern:

Be it known that I, ROBERT L. LYONS, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Thread-Cutting Mechanism for Sewing-Machines, of which the following is a specification.

This invention relates to sewing-machines having attachments for cutting or severing the thread and gripping it so as to hold it in position for a new operation.

The invention consists in certain novel features of construction and arrangement in such machines, which I shall now proceed to describe and claim.

Of the accompanying drawings, Figure 1 represents a front elevation of a sewing-machine constructed in accordance with my invention, the frame being partly broken away. Fig. 2 represents a plan view of the parts above the work-plate. Fig. 3 represents a similar view, on a reduced scale, with the parts in a different position. Fig. 4 represents a perspective view of the main parts. Figs. 5 and 6 represent end elevations showing the gripping devices in different positions. Fig. 7 represents a detail sectional view showing the action of the grippers and the auxiliary cutter on the thread. Fig. 8 is a detail perspective view illustrating principally the action of the cutting and holding device for the under thread. Fig. 9 is a cross-section of the gripping-jaws. Fig. 10 is a vertical section on the axis of the cam-shaft which operates the grippers.

The same reference characters indicate the same parts in all the figures.

In the drawings, 1 is the arm; 2, the work-plate; 3, the needle-bar; 4, the needle; 5, the presser-bar, and in Fig. 1 6 represents the stitch-forming mechanism below the work-plate. All of these parts may be of any desired construction whereby one or two threads are employed to make the stitch.

The machine as here shown is adapted for sewing buttons on a fabric.

7 7 are a pair of jaws for holding the button 8 and clamping the fabric 9 against an under plate 10, said jaws and under plate being given certain movements in a manner well known in machines of this character.

My improved cutting and gripping mechanism for severing and holding the upper

thread is adapted after a certain number of stitches have been formed to automatically move forward in position to cut and grip the thread between the needle and the work, whereby the necessity on the part of the operator for performing this operation is done away with, and the upper thread is properly held in position for a new operation. My improvements also have provisions whereby soon after the stitching of the new button has begun the grippers which hold the end of the starting-thread are caused to retract and draw said end across the edge of a cutter, whereby this end is severed close to the work.

11 12 are a pair of gripping-jaws pivoted together at 13, the rearmost and under jaw 11 having a cutter 14, Fig. 9, adapted to coact with the under side of the jaw 12, the arrangement being such that when the jaws are brought together upon the thread the thread is severed and the severed portion held or gripped between the ends of the jaws. The jaw 11 is carried by a slide 15, and the jaw 12 is mounted upon the jaw 11. The slide 15 is carried in guides on a slide-holder 16, which is journaled to rock on pivots 17 17 and supported by a vertical sleeve 18, projecting upwardly from the work-plate or bed of the machine, the angle of said holder, and hence the degree of elevation of the jaws above the work-plate, being regulated by an adjusting device 19. The sleeve 18 journals a vertical shaft 20, having on its lower end a gear 21, engaging a worm 22 on the under shaft 23 of the machine, which operates the lower part of the stitching mechanism. The upper end of the shaft 20 carries a snail-cam 24, which acts on a stud 25 on the slide 15, whereby the gripping-jaws are projected toward the stitch-forming mechanism. A spring 26 retracts the jaws. A second spring 27 normally closes the jaw 12 into gripping relation with the jaw 11, and a second cam 28, mounted above cam 24, acts on the heel of jaw 12, so as to open the same into position to engage the thread. The upper cam 28 is held to the lower cam 24 by a screw 29, passing through a slot 30 in cam 28, whereby the upper cam may be rotatably adjusted so as to cause the release of the jaw 12 to occur while the needle is elevated. While the machine is stitching the

button on the fabric the jaws 11 12 are moved forward by the cam 24 from a retracted position toward the stitching mechanism, and during such movement they are held open by the cam 28, so as to pass on opposite sides of the path of the needle. The release of the jaw 12 by its cam 28 allows the spring 27 to act to carry the gripping portion of jaw 12 toward the gripping portion of jaw 11; but provision is made for arresting this movement by means of a pivoted stop-dog 31 normally in the path of the jaw 12, which holds the jaws temporarily in nearly-closed relation, as shown in Fig. 5. A link 32 connects the dog 31 with a pivoted lever 33, having a chain 34 connecting it with a suitable treadle, whereby the operator is enabled to lift the dog 31 at will and release the jaw 12. Thus if through any faulty adjustment of the machine jaw 12 should be released by its cam 28 while the needle 4 is down between the jaws the operator may continue the machine in operation until the needle is elevated and may then release the jaw 12. The release of the jaw 12 by the elevation of the dog 31 brings it together upon the jaw 11, and the thread is thereby severed close to the work, and the severed end is gripped and held by the jaws to the rear of the path of the needle. The machine is thus maintained in condition for a new operation without the operator being required to touch the thread.

35 is a relatively fixed cutter having its cutting edge 36 above the work-plate and below the jaws 11 12 a slight distance to the right of the path of the needle. The machine is arranged so that the jaws 11 12 remain stationary for a while after the machine has been started on a new button, the end of the starting-thread being held to the rear of the needle while several stitches are taken, after which the stud 25 on the slide 15 escapes over the abrupt corner 37 of the cam 24 and the spring 26 retracts the jaws 12. This causes the thread to be carried across the edge of the cutter 35, as represented in Fig. 7, whereby the thread end is severed close to the button and the short loose end of thread which remains on the button is laid in with the succeeding stitches.

The knife 14 of the thread-gripping device may be omitted, if desired, so that the thread is not cut when the grippers 11 12 come together, but is broken between the grippers and the work by the act on the part of the operator of withdrawing the work.

I claim —

1. In a sewing-machine, the combination of stitch-forming mechanism, means to automatically grip and hold the thread out of the path of the needle after a predetermined number of stitches have been formed, and means to automatically sever the held thread end after one or more succeeding stitches have been formed.

2. In a sewing-machine, the combination of stitch-forming mechanism, a thread-gripping device, means under the control of the operator to arrest the thread-gripping action of said device, and means to automatically bring said device into coacting relation with said means.

3. In a sewing-machine, the combination of stitch-forming mechanism, a pair of coacting grippers one of which is capable of an opening-and-closing movement with respect to the other, a spring device to yieldingly close said movable gripper, a cam adapted to open and then release said gripper, and a stop under the control of the operator adapted to arrest the closing of said gripper after its release by the cam and movable to release the gripper.

4. In a sewing-machine, the combination of stitch-forming mechanism, the under shaft for operating the lower part of said mechanism, a horizontally-moving slide mounted above the work-plate, thread-grippers carried by said slide, a vertical shaft geared to said under shaft, and two cam devices carried by said vertical shaft, one of said cam devices controlling the movement of said slide and the other controlling the relative opening-and-closing movement of the grippers.

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

ROBERT L. LYONS.

Witnesses:

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