

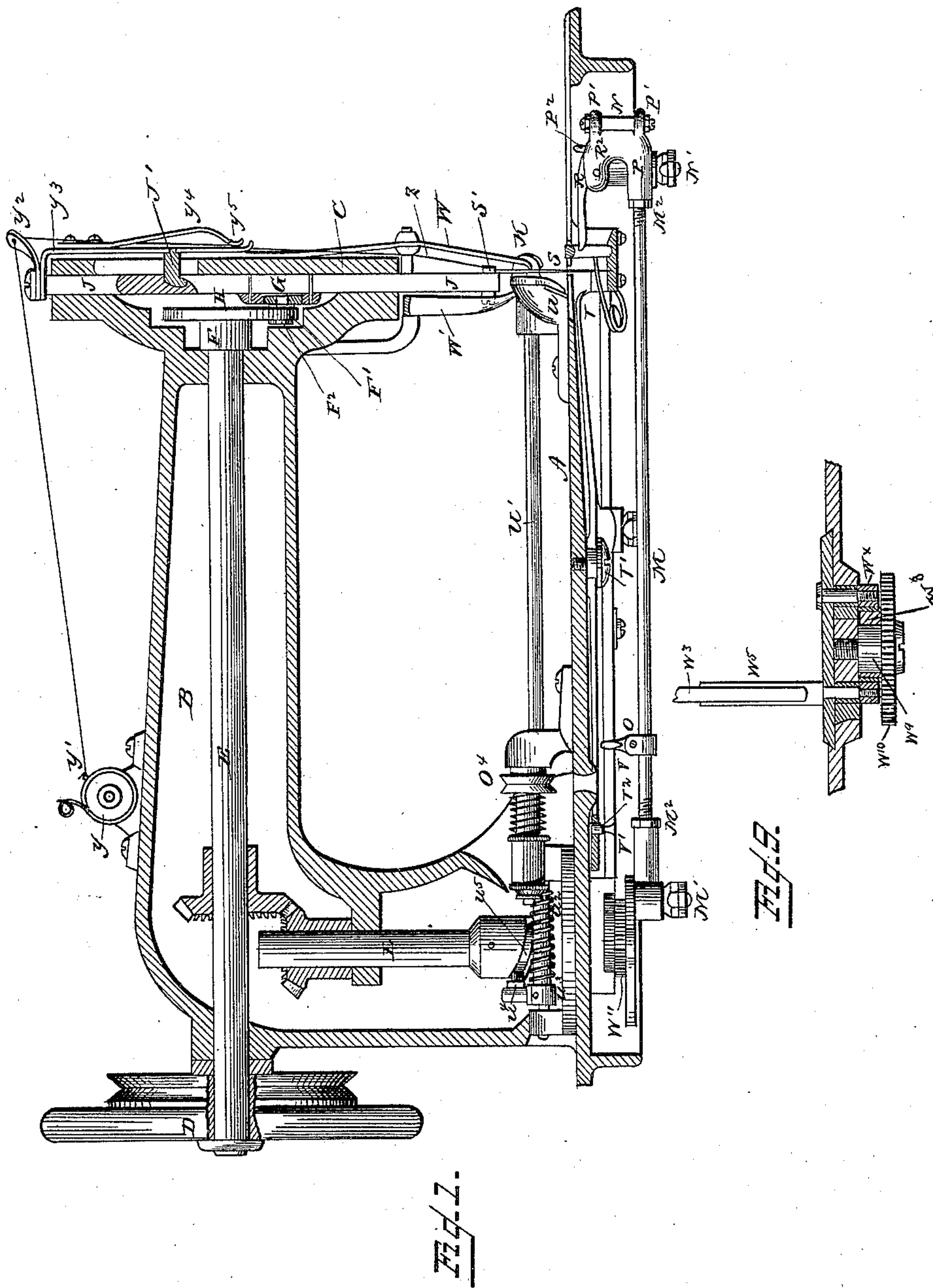
(Model.)

3 Sheets—Sheet 1.

J. BIGELOW.
SEWING MACHINE.

No. 331,026.

Patented Nov. 24, 1885.



WITNESSES
Francis L. Ourand
H. L. Cutler

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(Model.)

3 Sheets—Sheet 2.

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Fig. 2.

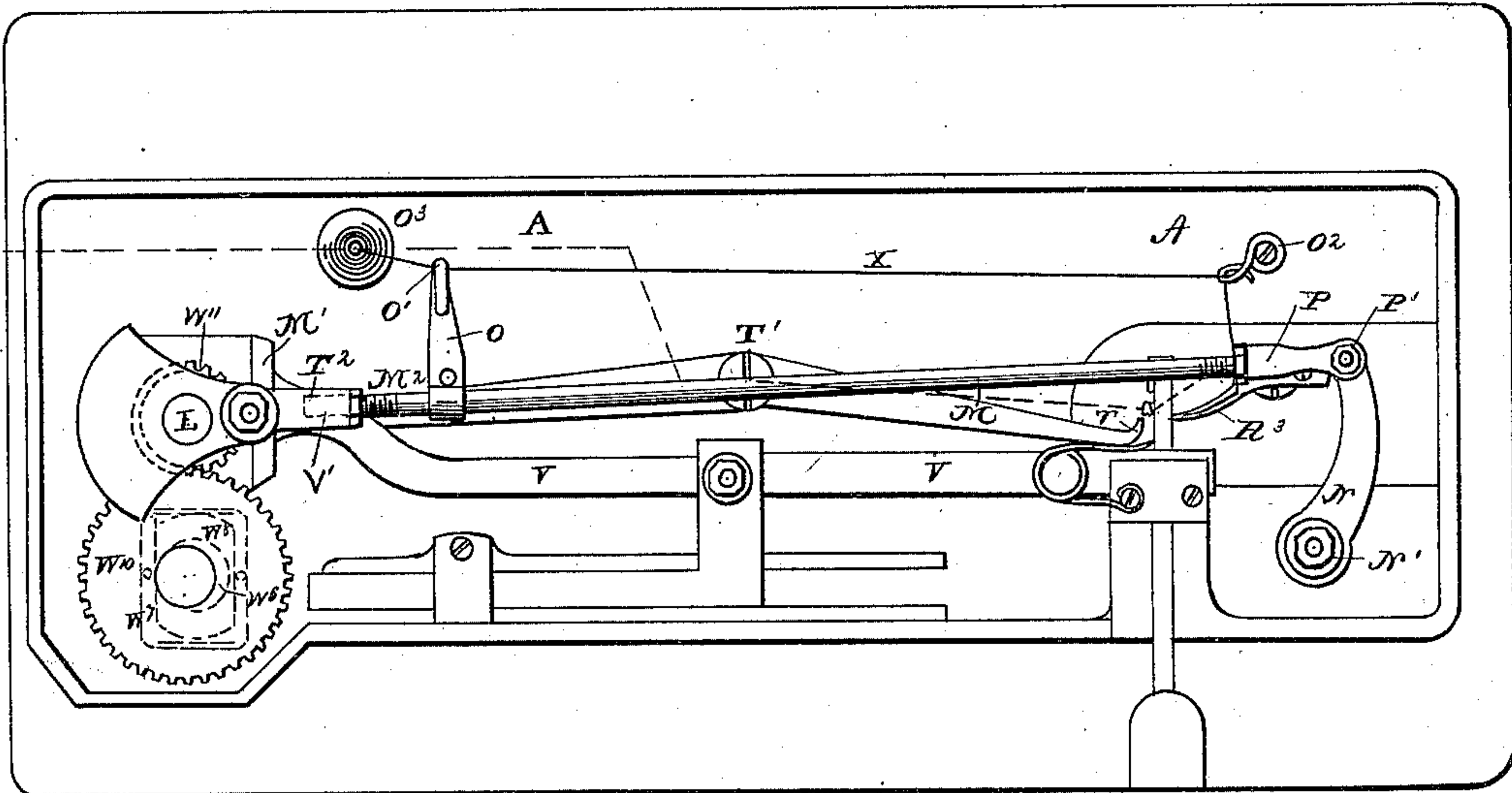


Fig. 3.

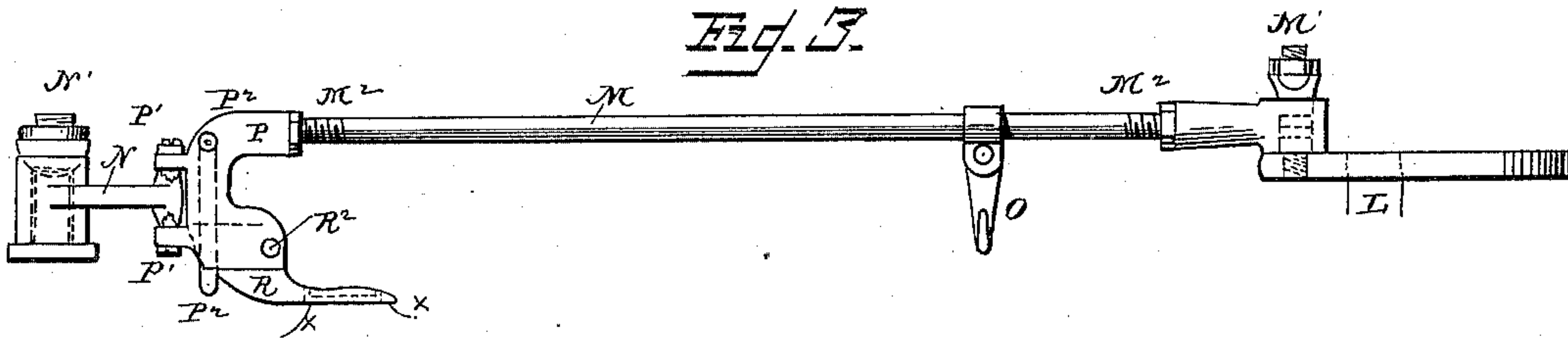


Fig. 5.

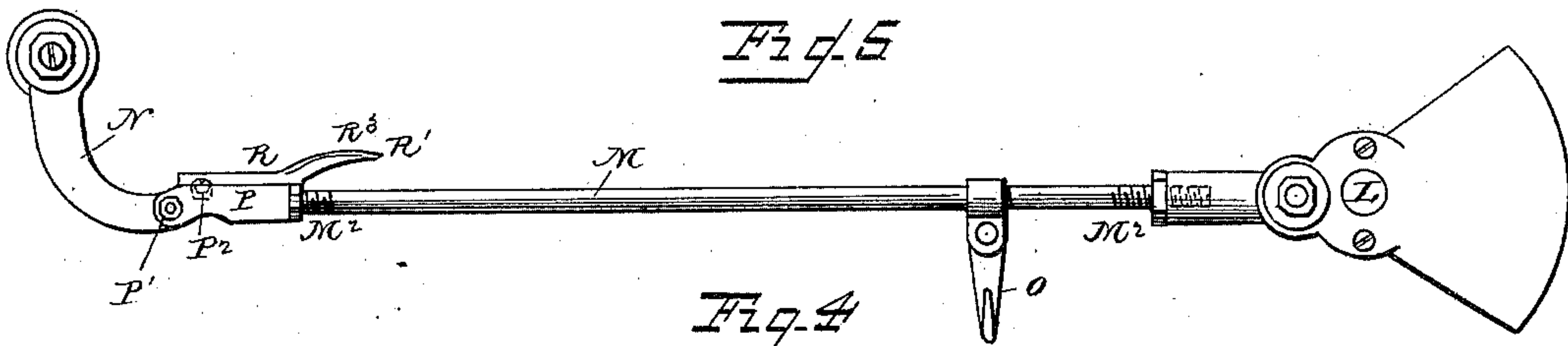


Fig. 4.

Fig. 12.

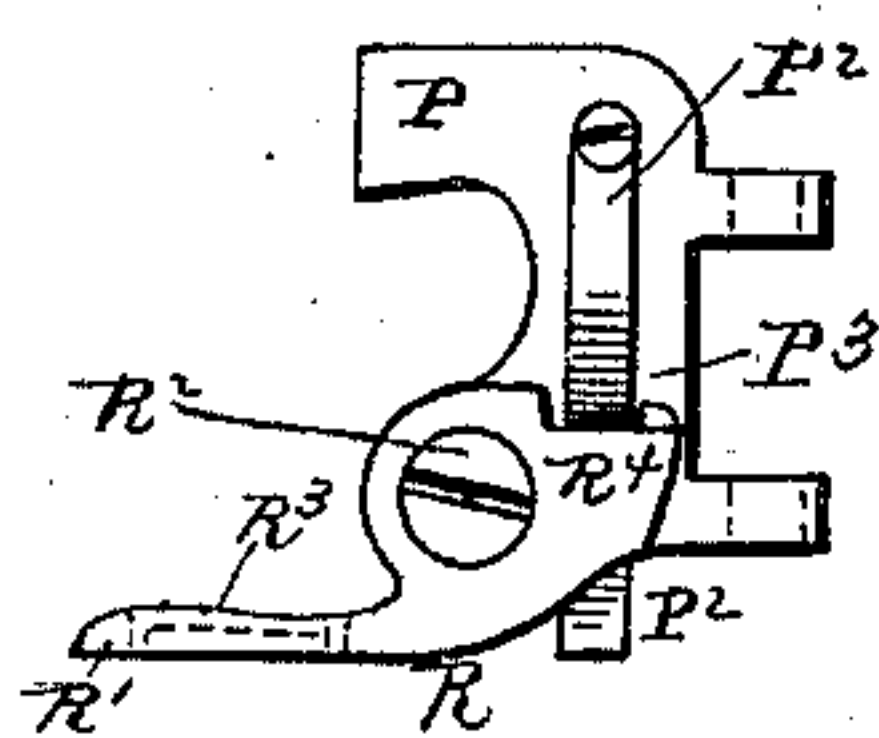
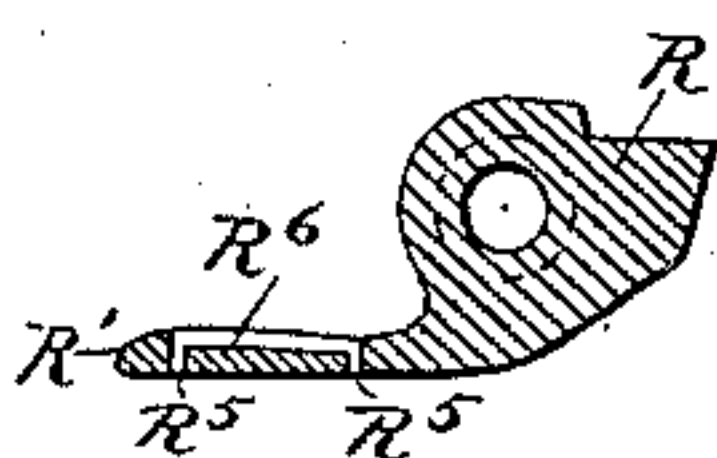


Fig. 14.



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Fig. 7.

Fig. 8.

Fig. 13.

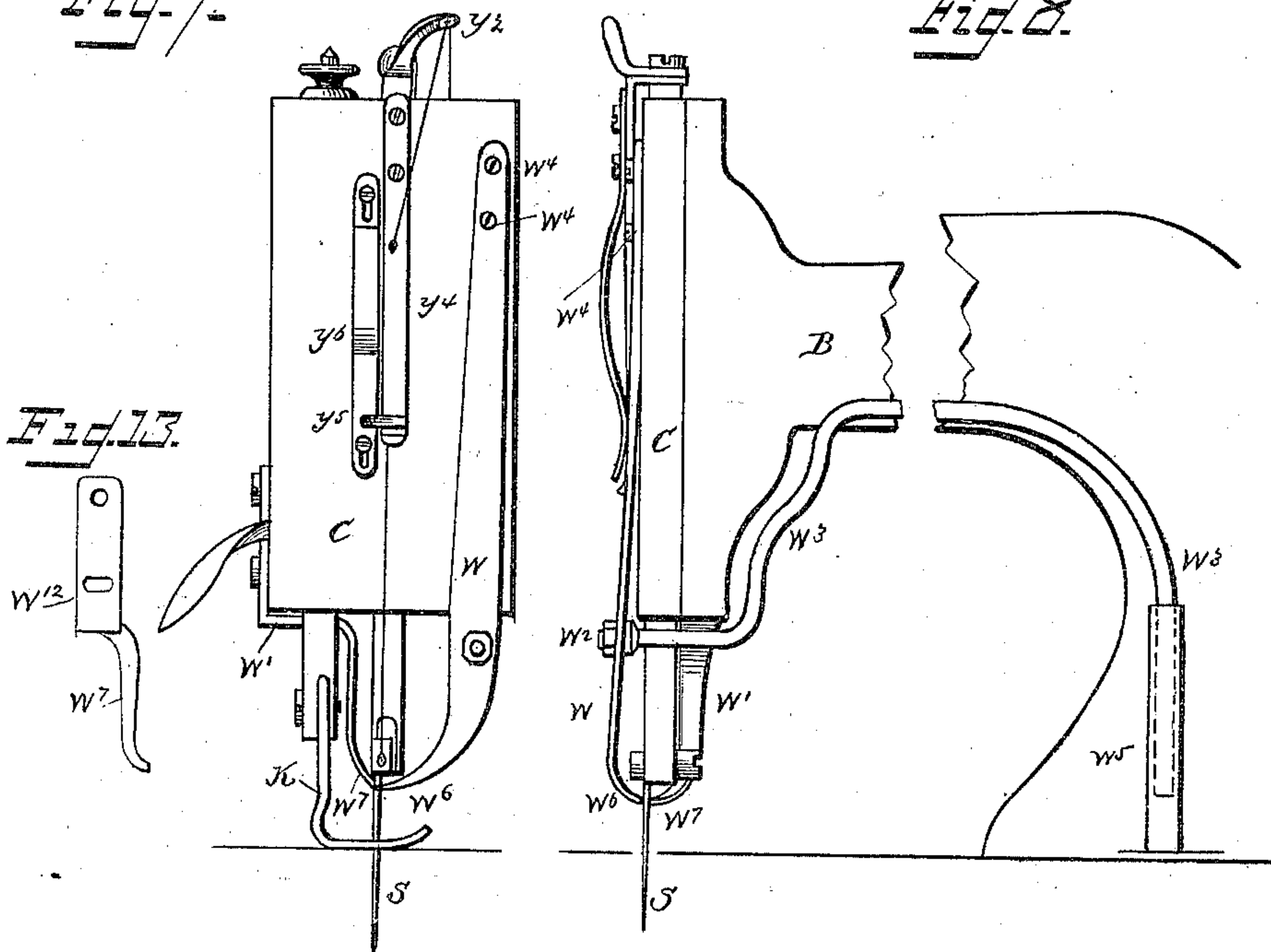


Fig. 10.



Fig. 11.

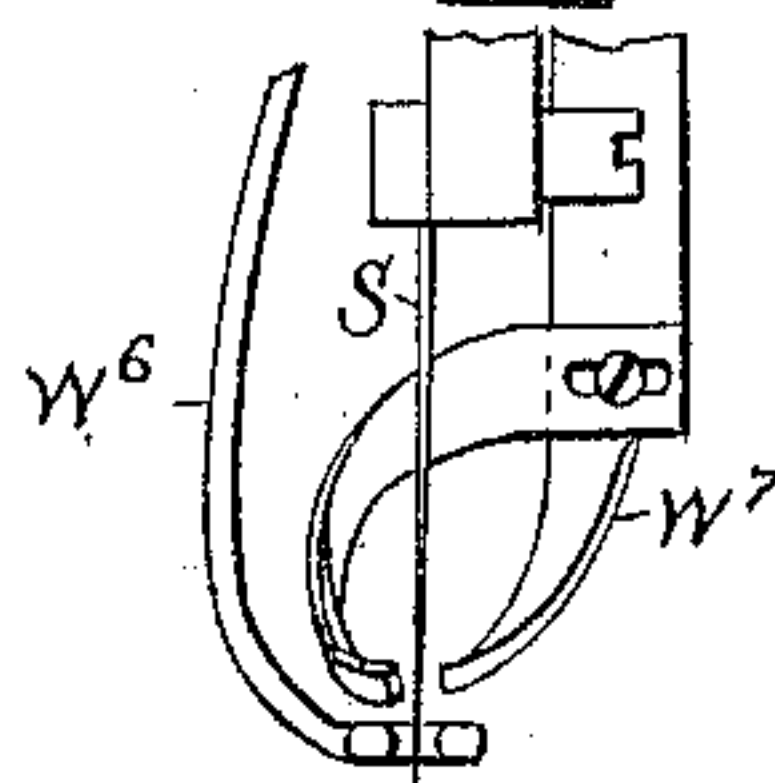
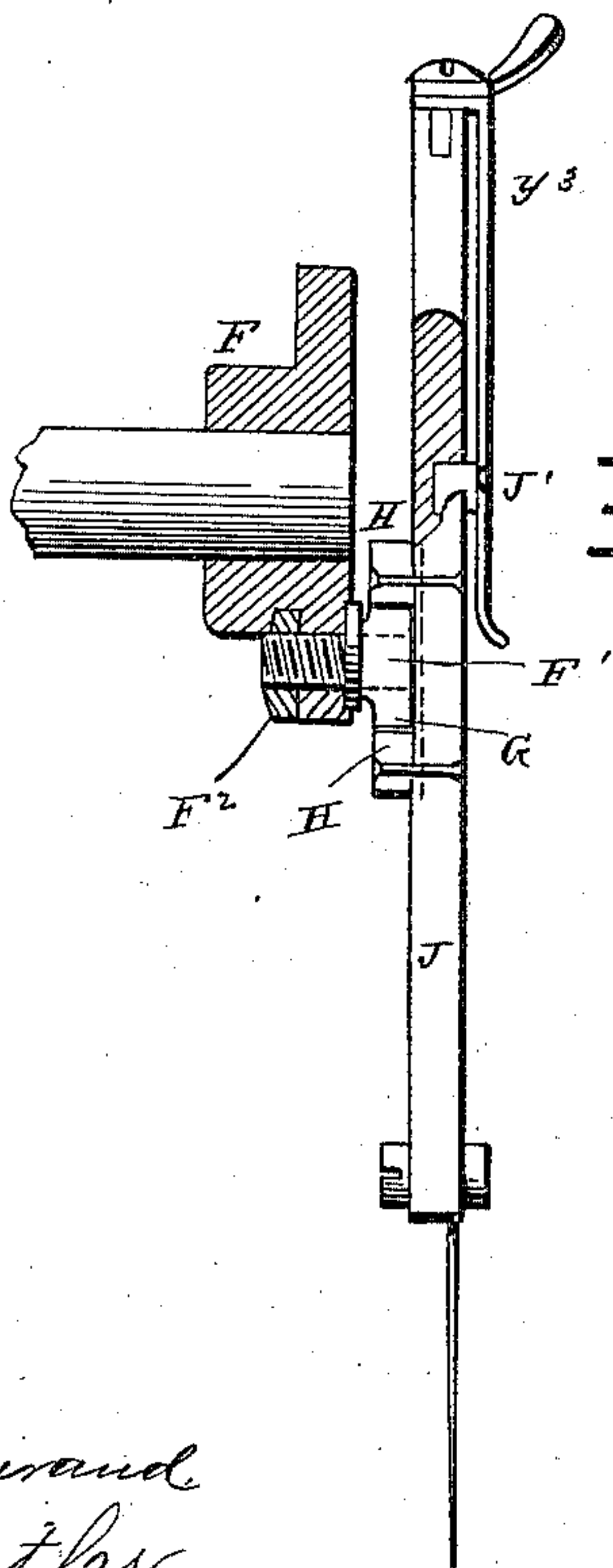


Fig. 6.



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UNITED STATES PATENT OFFICE.

JOHN BIGELOW, OF PHILADELPHIA, PENNSYLVANIA.

SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 331,026, dated November 24, 1885.

Application filed August 7, 1883. Serial No. 103,057. (Model.)

To all whom it may concern:

Be it known that I, JOHN BIGELOW, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Sewing-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

This invention consists of a modification of the construction of the mechanism of my pending application No. 58,843, filed April 19, 1882.

Figure 1 is a side view, partly sectional, showing the general working parts of my sewing mechanism, the actuating device of my trimmer, and parts of the irregular-stitch mechanism. Fig. 2 is a plan view of the bottom of the machine. Figs. 3, 4, and 5 are top and side views of the looper, its actuating parts and connections therewith. Fig. 6 is a sectional view of the needle-bar with its actuating device. Fig. 7 is a front elevation of the face-plate, showing upper-thread nipper, needle, and needle-bar, presser-foot, and part of the device for making the stitch zigzag or irregular. Fig. 8 is a side view of the neck (broken) of the machine, and shows the connection of the irregular-stitch device with its actuating mechanism. Fig. 9 is a sectional view of the irregular-stitch-actuating mechanism. Figs. 10 and 11 are details showing the parts for reciprocating the needle adapted to act on both of its sides. Fig. 12 is a detail in section, showing the thread holes and groove in the looper. Fig. 13 is a detail showing the means of adjusting the needle-gage point W^1 . Fig. 14 is a perspective view of the looper.

The same letters indicate like parts when they occur in the accompanying drawings.

The take-up spring y^1 is placed behind the tension-disks y . The nipper-piece y^3 is secured by a screw to the top of the needle-bar, and by an additional holding-piece, J' , to the

face of the same. The stud F' is secured to the crank-disk F by a nut, F^2 . The looper R is hinged on the looper-rod piece P at R^2 , and a catch-spring, P^2 , arranged behind it on looper-rod piece P , so that when in its working position it will be caught at R^4 and firmly held by a shoulder, P^3 , on the spring P^2 . By pressure at P^2 the shoulder P^3 can be withdrawn from contact with the looper at R^4 , and the looper-point R' can be turned up into a convenient position for threading. The looper-rod piece P is secured to the link N by taper end bolts and jam-nuts $P' P'$ in taper sockets, in order to allow taking up for wear. The link N is secured to the bed A by a stud, N' , with a taper end nut and jam-nut. The looper-rod M is arranged to be adjusted as to length at M^2 , and is secured to its actuating-crank at M' by a stud and a taper end nut and jam-nut. The thread-holes through the looper R pass from the upper to the lower side, and are connected by a slot on its lower side. This places the delivery-point of the looper-thread in a position facing the bottom of the work-plate of the machine, and one which will make sure of the loop-holder T engaging with the looper-thread. The loop-holder T has a hook on its point, which engages and holds the looper-thread during a part of the formation of the stitch, and assists in causing a surplus amount of thread to be delivered, so that the stitch when finally set can have any desired amount of looseness. The loop-holder T has a reciprocating movement, being pivoted at T' and slotted at T^2 , so that it can engage a stud, V^2 , in the feed-lever V , from which it receives its movements. On the looper-rod M is the looper-thread controller O , placed so that its movements will be between the stationary guides O^2 and O^3 of the lower thread, x . This arrangement allows me to do away with a spring in controlling the lower or looper thread other than the one used at the tension-disks O^4 . The needle S is attached to the needle-bar J at S' , and receives vertical reciprocation by the revolution of the shaft E through the crank-disk F , stud F' , sliding block G , and cross-head H . By means of equal-sized beveled gears the rotary movements of the shaft E are conveyed through the vertical shaft L to the looper-rod

crank-pin M'. The circular movement of the end of the looper-rod M at M', and its reciprocation at P' through connection with the link N, which swings on the stationary stud N' in the bed-plate A, causes the point R' of the looper R, which is attached to the looper-rod piece P on the rod M, near to the swinging point P', to move on the line of a flattened oval. The line of reciprocation of the needle S is within the said oval; consequently the movements of the looper-point R' are around the line of reciprocation of said needle. I show a Singer feed. Work having been placed between the presser-foot K and the bed-plate A, and the needle S depressed to its lowest point, its thread z , Fig. 1, is nipped at y^5 between the spring y^4 and nipper-piece y^3 , which are carried by the needle-bar J. As the needle rises its thread is thus caused to throw out a loop, which the looper R immediately takes by a forward movement. The loop thus taken slips along the looper R and over its shoulder and offset R³. As the needle-eye is raised clear from the work, the nipper-spring y^4 is released from its hold on the needle-thread by its projection at y^5 passing up an incline, y^6 , Fig. 7, attached to the face-plate C of the machine. A strain is, however, kept on the thread by means of the thread-guide y^2 on the top of the needle-bar J, take-up spring y' , and tension-disks y , Fig. 1. The take-up spring y' is not always used, especially at high speed. When the needle reaches its highest point, is free from the work, and begins to descend, the looper-point R' is nearest to its actuating-center L, and swinging around one of the smaller ends of its oval. At this time the feed takes place, and its lever V, by means of its stud V' acting at T² on the loop-holder T, which swings at T', causes said loop-holder at T to move in a transverse direction to the line of movement of the looper-point R'. The hook of the loop-holder, under which the looper-thread delivery-point R' passes, is thus caused to take and hold the looper-thread x , Fig. 2. At the same time the looper-thread controller O, which is attached to the looper-rod M at a point nearest to the end M', and the movements of which it follows, has its thread-holding point O' carried out of line with the thread-guides O² and O³. It consequently draws an amount of thread through the tension-disks O⁴ equivalent to that used in the previous stitch. As the needle descends, the looper R is drawn back on the side of the needle opposite to that which it passed in its forward movement. Its shoulder and offset R³ holds the needle-loop which it has over it until it is drawn back beyond the needle-line, while its own thread, x , is held by the holder T. As soon as the needle-point has engaged the loop thus made, the continued backward movement of the looper R causes the needle-loop which it is holding to slip over the shoulder R³ and off the point R'. The nipper at y^5 checks a fur-

ther delivery of thread to the needle, and obliges it in its further descent and first rising movement to draw up and set its loop dropped from the looper R. When the looper-point R' in drawing back reaches about the line of the needle, its thread-controller point O' begins to return toward a line drawn between O² and O³, and causes a free delivery of the thread x to the looper. The position of the controller O on the rod M in its relation to the point M' affects the amount of movement of the point O', and in consequence, with the assistance of the tension-disks O⁴, the tightness or looseness of the set in the stitch of the looper-thread x . As the needle rises, the looper moves forward, again takes the needle-thread, and the stitch is formed as described.

Combined with the sewing mechanism described I have added a trimming device, described in my application No. 58,845, April 18, 1882, to which I convey motion by the cam U⁵ on the vertical shaft L. This cam actuates a stud, U⁴, in the lever U³ on the bar U', and conveys a rocking motion to an upper shear-blade at the end of said bar U' nearest to the needle. The lower blade is held in proper position by the block U. When the needle-bar is raised, the upper blade also is raised (the shears opened) and the feed takes place, carrying the work into the jaws of the shears. As the needle descends, through the action of the cam U⁵, the upper blade closes on the lower and trims the fabric.

Other of the well-known trimming devices may be used with said sewing mechanism. I show the present one to illustrate that the combination may be made.

With the combination of this sewing and trimming mechanism and the zigzag-stitch mechanism, as shown in Division B of this case, the seam covered by my cut hose patent, No. 9,113, dated March 9, 1880, can be made, although either mechanism can be used separately or applied to other machines and for other purposes. In this case no specific claim is made to the devices shown in Figs. 2, 7, 8, 9, 10, 11, and 13 of the drawings, which relate to the mechanism for making the zigzag or irregular stitch. These are all embodied in Division B of this case, filed October 22, 1885, Serial No. 180,591, and the invention therein shown is duly described and claimed in that division.

I claim—

1. In combination with the reciprocating needle of a sewing-machine, the looper R, constructed substantially as shown, and having a groove along its lower edge and between eyes, arranged substantially as described and shown.

2. In combination with the stitch-forming mechanism of a sewing-machine, a looper provided with supporting means which permits said looper to be turned up for convenience of threading, substantially as described.

3. In combination with the needle of a

sewing-machine, a looper, R, attached to a swinging bar, provided with a bearing at each of its ends, substantially as described.

4. In combination with sewing mechanism
5 to make a stitch substantially as described, two stationary thread-guides, a looper-thread controller, and means for positively operating the same, substantially as described.

5. In combination with the stitch-forming
10 mechanism, substantially as described, a

looper-thread holder reciprocated transversely to the line of movement of the point of the looper, substantially as described.

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

JOHN BIGELOW.

Witnesses:

JOS. GREENWOOD,
LISLE STOKES.