

(No Model.)

J. BIGELOW.  
SEWING MACHINE.

No. 331,027.

Patented Nov. 24, 1885.

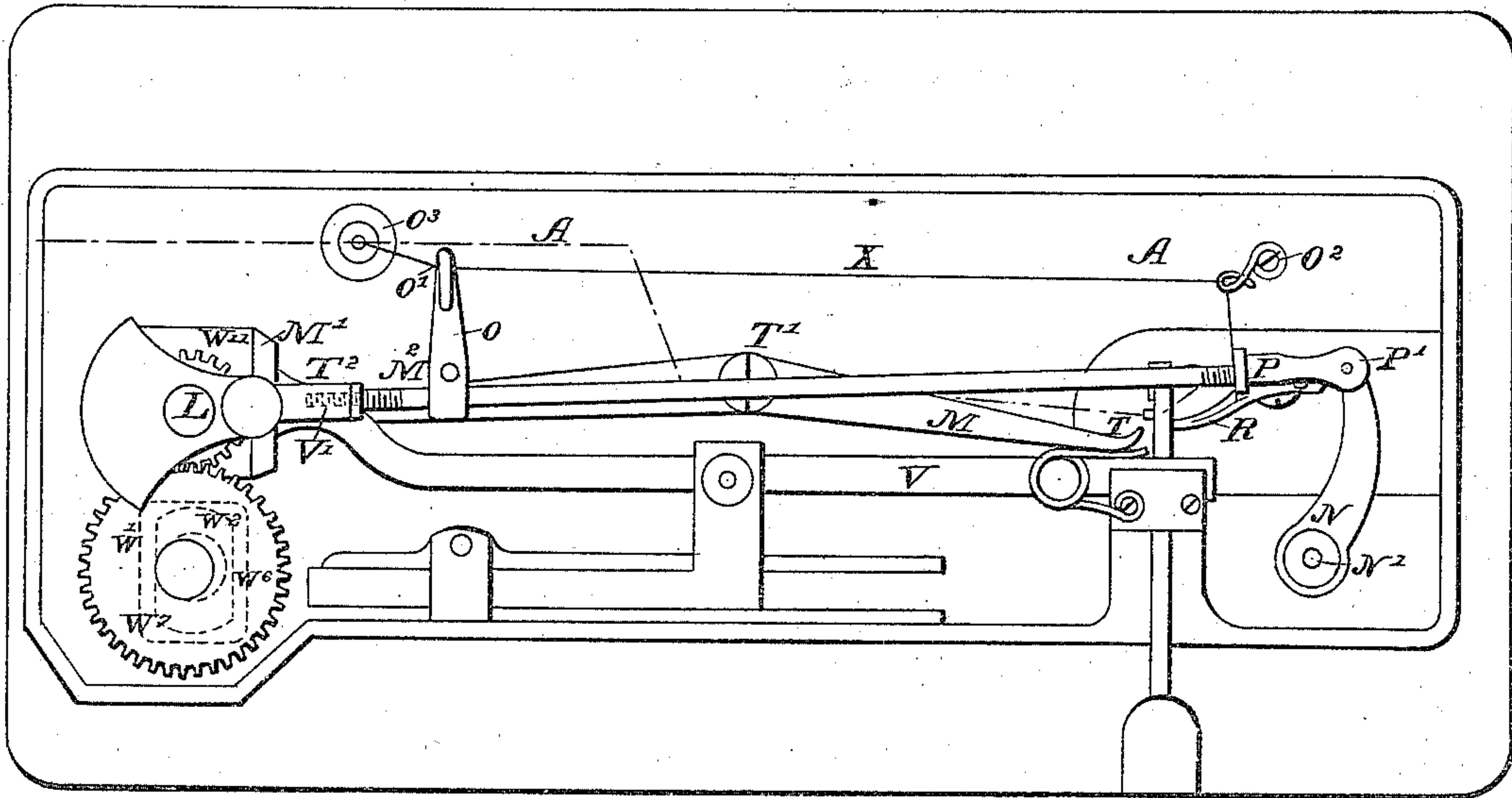


Fig. 1.

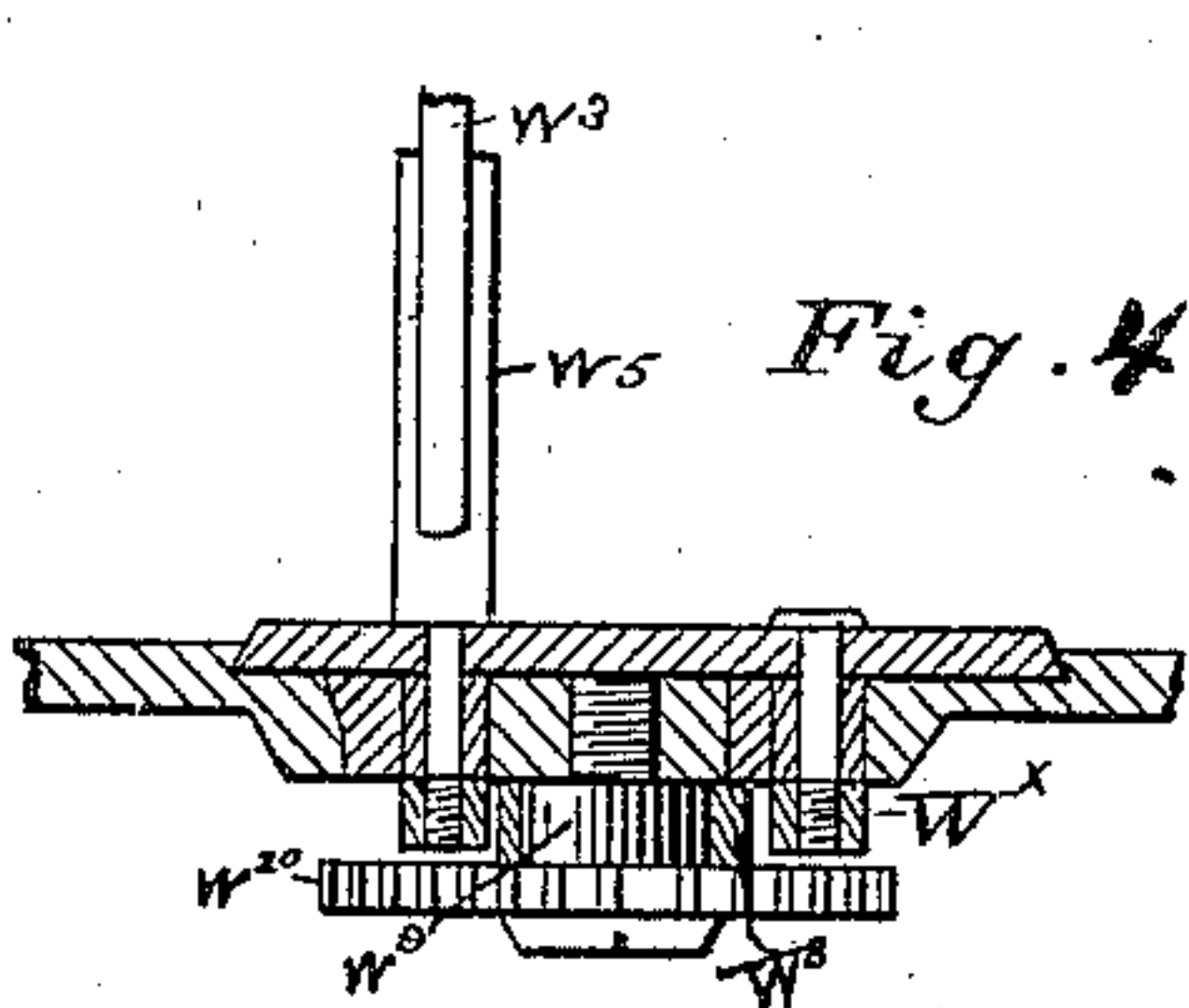


Fig. 2.

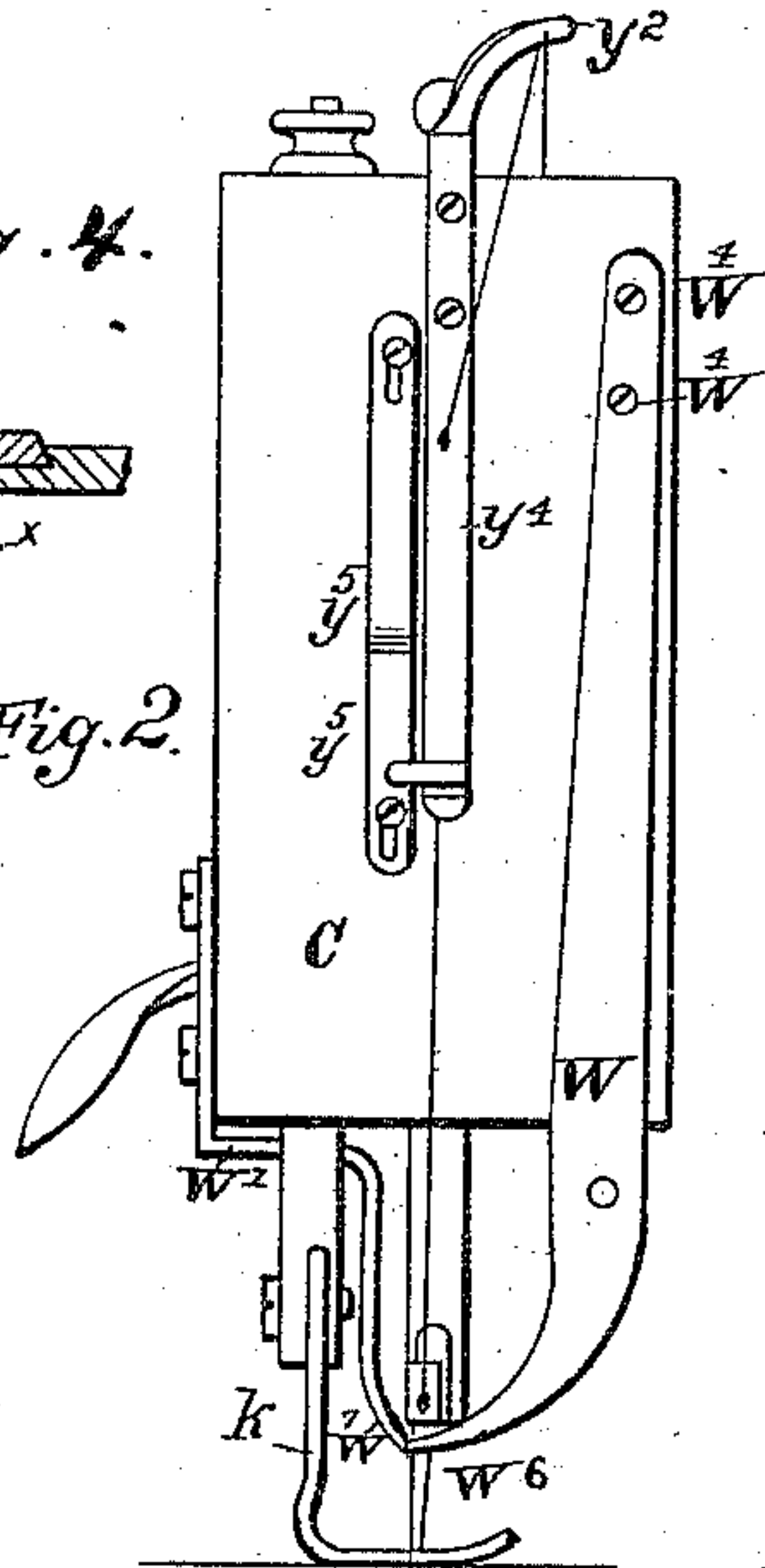


Fig. 3.

Fig. 4.

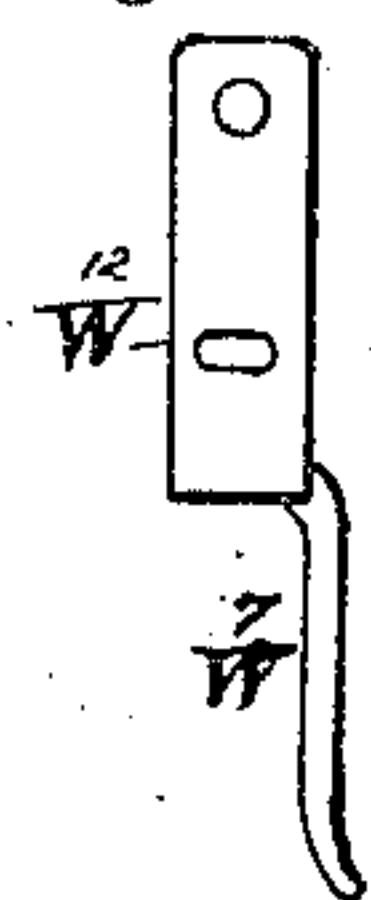


Fig. 5.

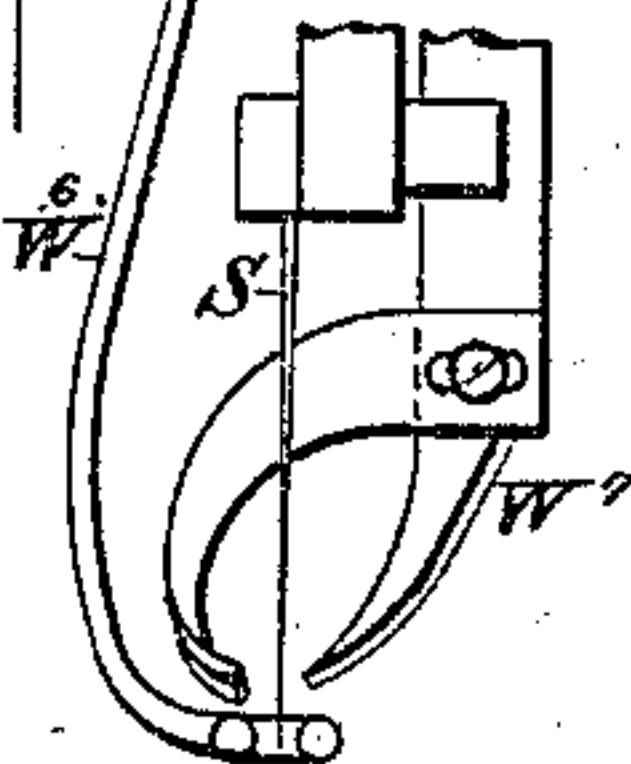


Fig. 6.

Witnesses  
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Inventor  
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By his Attorney.  
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# UNITED STATES PATENT OFFICE.

JOHN BIGELOW, OF PHILADELPHIA, PENNSYLVANIA.

## SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 331,027, dated November 24, 1885.

Application filed October 22, 1885. Serial No. 180,591. (No 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, of which the following is a specification, reference being had therein to the accompanying drawings.

Figure 1 is a plan view of the bottom of the machine. Fig. 2 is a front elevation of the face-plate, showing the needle and needle-bar, presser-foot, and part of the device for making the stitch zigzag or irregular. Fig. 3 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. 4 is a sectional view of the irregular-stitch-actuating mechanism. Figs. 5 and 6 are details showing the parts for reciprocating the needle adapted to act on both of its sides. Fig. 7 is a detail showing the means for adjusting the needle-gage point.

This case is a division of my application for patent filed August 7, 1883, Serial No. 103,057, and the features of novelty herein embraced relate to the construction and operation of the needle-vibrating devices or mechanism, all as will be now more fully and specifically set out and explained, reference being had to the accompanying drawings.

The devices covered in this case relate more particularly to mechanism adapted to produce a zigzag or irregular stitch. By this invention, alternately with each stitch when the needle has risen free from the work, its point is first pressed to one side of its true line of descent and held until it has penetrated the work. Then at the next stitch the needle-point is allowed to take its regular course in entering the work, or it may be pressed in the opposite direction.

The strip or spring bar W is attached at  $w^4$  to the face-plate C, and extends down to a narrow point,  $W^6$ , in line of the needle S, and raised sufficiently above the work-plate A not to interfere with the presser-foot when lifted. The piece  $W^7$  is also attached to the neck of the machine in such a position that its point  $W^7$  shall be opposite to  $W^6$ . The point  $W^7$  may be made adjustable by being slotted at the point

$W^{12}$ , where it is secured to the body of the machine, and serves as a gage to determine the distance the needle-point shall be pressed out of its true line, and consequently the amount of the zigzag.

The point  $W^6$  of the spring-strip W is reciprocated to the right or left of the line of the feed alternately with each stitch, and receives its motion through the bar  $W^3$ , attached to it at  $W^2$ , and connected through the post  $W^5$  with a cross-head,  $W^x$ , as shown in Fig. 4, reciprocated by a block,  $W^8$ , which slides in it, and is actuated by an eccentric,  $W^9$ , on a gear-wheel,  $W^{10}$ , meshing in the proportion of two to one in a smaller gear,  $W^{11}$ , on the revolving vertical shaft L, as shown in Fig. 1. I do not, however, limit myself to the device described for obtaining the alternate vibration of the spring-bar W at its point  $W^6$ , since any of the well-known devices may be used.

In operation, the needle being raised to its highest point, and by means of the eccentric  $W^9$  and connecting parts the bar  $W^3$  being drawn to its farthest point back, the point  $W^6$  of the spring-bar W is pressed against the point of the needle S, which in turn is deflected from its true line (the needle-bar remaining in its usual position and bearings) against the gage-point  $W^7$ . Thus pressed, the needle descending enters the work at one side of its true line of movement. The strain on it by the point  $W^6$  may be then released by a counter movement of the bar  $W^3$  through the action of the eccentric  $W^9$ . Since the line of deflection of the needle is the same as that of the movement of the looper R the formation of the stitch is not interfered with. The needle being again raised to its highest point, the point  $W^6$  of the spring-bar W, through the reverse action of the eccentric  $W^9$ , being carried away clear from the needle, it springs back to its true or natural line and enters the work to one side of its previous point of penetration.

If desired, the gage  $W^7$  can be arranged to act on both sides of the needle, and the point of the needle deflected each stitch alternately to the right and to the left of the line of penetration by the needle, where its point is not sprung to one side, thus increasing the amount



of the irregularity of the stitch over the method shown, where dependence is placed on the resilience of the needle to return after being deflected to its true or natural line.

- 5 Very little strain is required to deflect the point of the needle when free from the work. Consequently the piece W is made a spring-bar, its point W<sup>6</sup> having the same amount of reciprocation, and depending on the gage W<sup>7</sup> 10 to determine the amount of the irregularity, which it does by overcoming the pressure of the spring-bar W. Not only is the pressure relieved at W<sup>6</sup>, but as the needle is rigidly secured at the end opposite to its point in the 15 end of the needle-bar, which operates in fixed bearings as it descends to its lowest point, by the increasing stiffness of its part in contact with the work, it obliges the fabric to yield, and so it recovers in a great measure its true 20 or natural position.

The needle-throat of the work-plate may be beveled on its upper side, so that the point of the needle, if thrown too far, shall be drawn back into the needle-hole.

- 25 This principle of making an irregular stitch can be used for making button-holes or fancy sewing, such as the Grecian stitch and other

forms, having suitable operative mechanism therefor. It may be used equally well with a shuttle or other stitch-forming mechanism 30 which moves in a line similar to the vibrating of the needle.

Having now described my invention, what I consider new, and wish to secure by Letters Patent, is— 35

1. The combination, with the stitch-forming mechanism of a sewing-machine, of a device to spring and deflect the point of the needle before entering the work, and a gage to determine the amount of such deflection, substantially as and for the purposes set forth. 40

2. In combination with the needle of a sewing-machine, a spring-bar, W, having a free end, W<sup>6</sup>, provided, as described, with means for vibrating the same across the vertical line 45 of the needle movement, whereby the needle-point may be deflected, substantially as described.

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

JOHN BIGELOW.

Witnesses:

JOHN A. WIEDERSHEIM,  
JAS. GREENWOOD.