O. AVERY.

Sewing Machine.

No. 9,338. Patented Oct. 19, 1852.

Fig. 1.

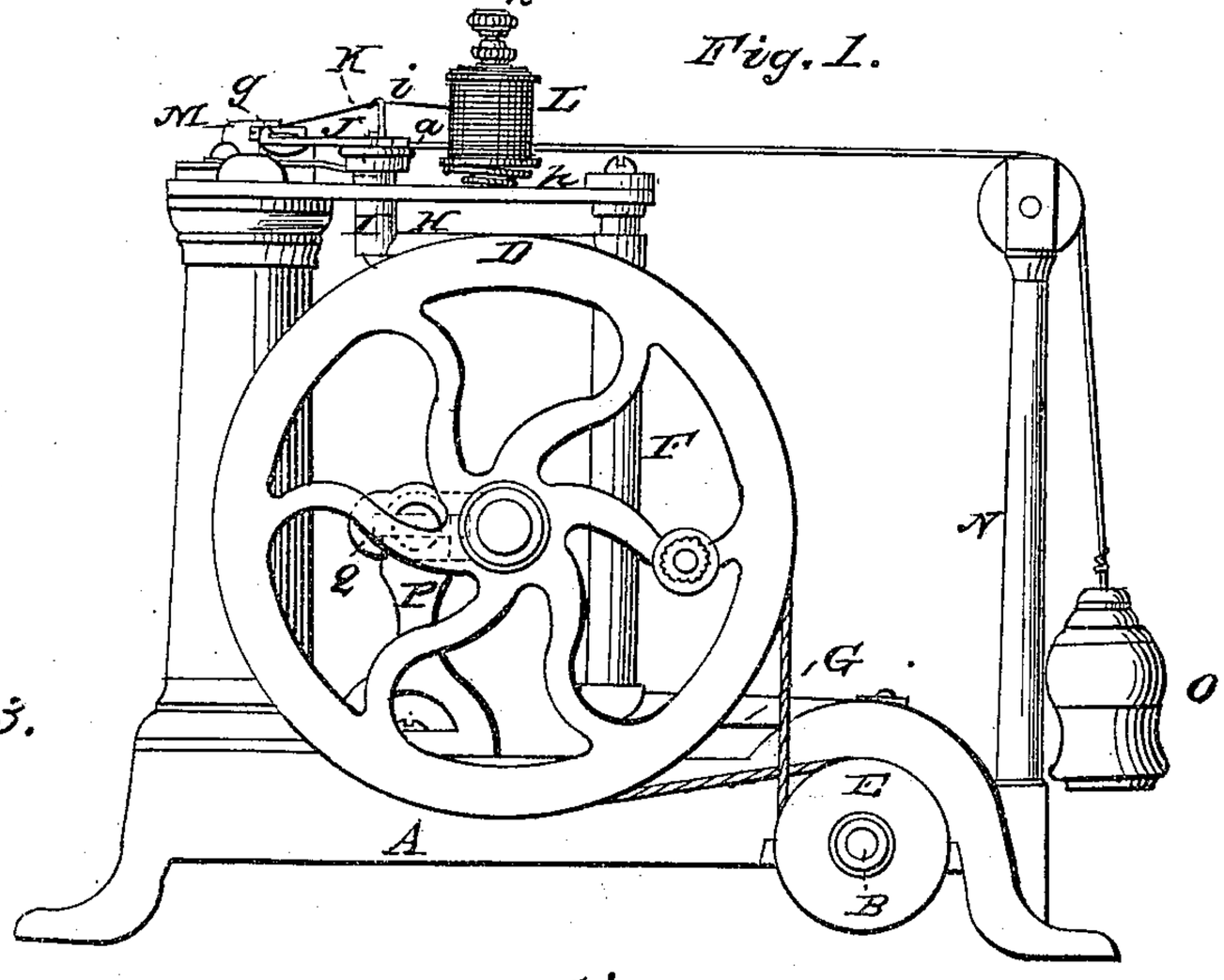
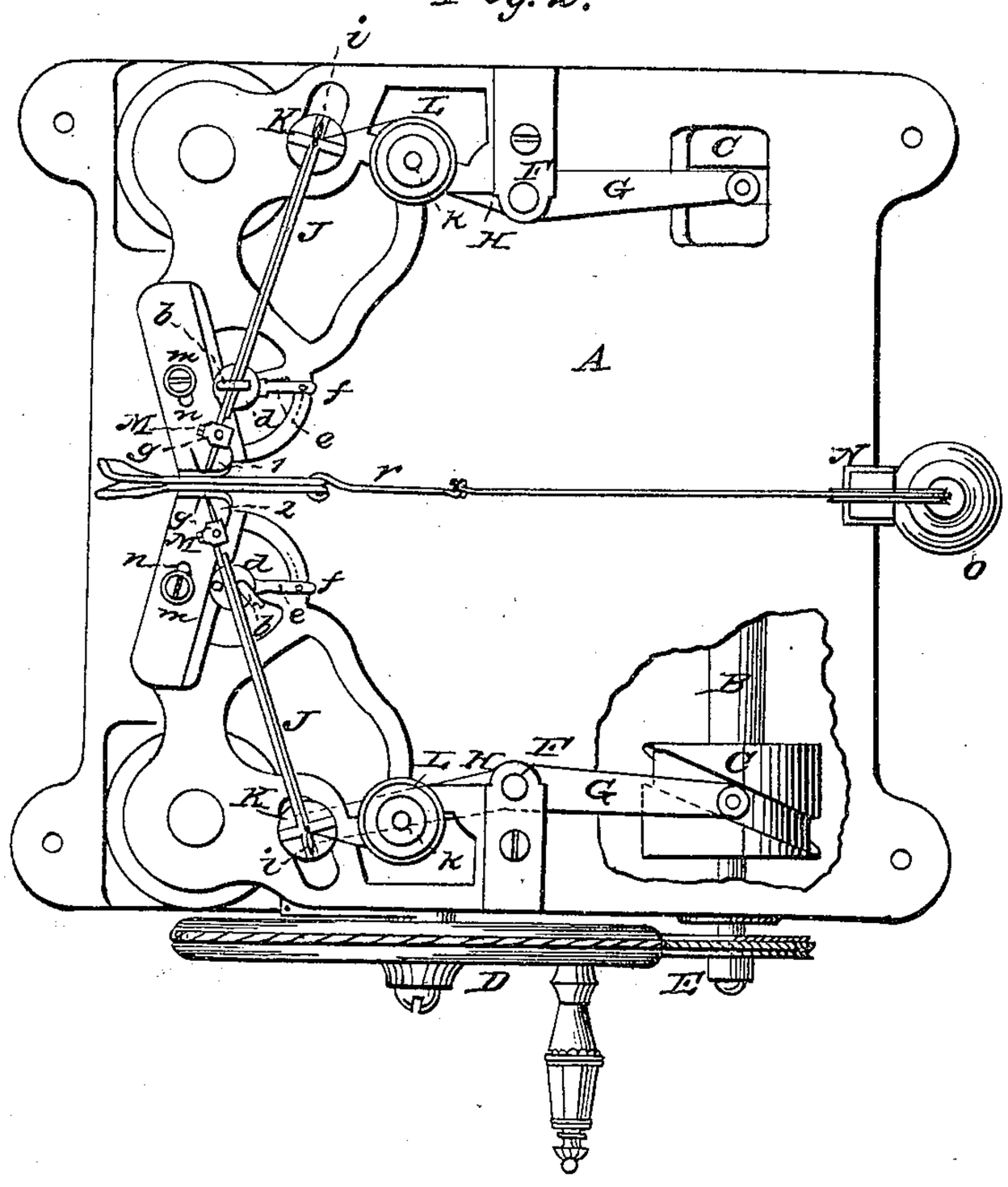


Fig. 3.

Fig. 4.

Fig. 2.



UNITED STATES PATENT OFFICE.

OTIS AVERY, OF HONESDALE, PENNSYLVANIA.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. **9,338**, dated October 19, 1852.

To all whom it may concern:

Be it known that I, OTIS AVERY, of Honesdale, in the county of Wayne 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 same, reference being had to the accompanying drawings, making a part thereof, in which—

Figure 1 represents a view from one of the ends. Fig. 2 represents a top view; and Figs. 3 and 4, details, to which reference will be made in the body of the specification.

Similar letters in the several figures denote the same parts.

The nature of my invention consists in using two adjustable spring needle-bars moving on the same plane obliquely toward each other from opposite sides of the cloth or other material to be sewed, for regulating the length of the stitch; also, the weight or its equivalent for drawing through the cloth as fast as it is sewed and released by the needles, one of which is always in the cloth to prevent it from being drawn entirely through.

To enable others skilled in the art to make and use my invention, I will proceed to describe the same with reference to the drawings.

The bed-plate or base A is substantially made of iron or other metal, and underneath it is arranged in proper bearings the shaft B, carrying the two grooved cams C, for operating the machine. The shaft B may be driven by a belt from the main driving-pulley D passing around a smaller pulley, E, on one end of said shaft, operated by hand, or by any other first moving-power and equivalent gearing. Two upright shafts, F, having their journals supported at top and bottom in the top and bottom plates of the frame, are each provided with two horizontal arms, G H, the lower ones, G, having in their extreme ends pins for supporting friction-rollers which play in the grooves of the cam-wheels C, and which give to the shafts F a rocking or vibratory motion. The upper arms, H, have on their extreme ends vertical standards I, which standards project above the top plate of the machine, through slots cut therein, sufficiently far to receive the needle-bars J. The vibratory motion given to the shafts F by the cams C is communicated to the needle-bars J through the arms H, before described. The tops of the standards I carry small cylinders or drums K, in which are coiled spiral springs, one end of each of which springs is fastened to said standards and the other end to the inner periphery of its respective drum, as seen at Fig. 3. In the tops of these drums are made any suitable number of holes, into one of which the pins *a*, Fig. 1, on the under sides of the needle-bars may be inserted, and which admits of the easy removing or replacing of the needle-bars. When the needle-bars are to be placed on the drums, the drum is taken between the thumb and finger and turned slightly round, so as to strain up the spring. The pin *a* on the needle-bar is then inserted in one of the holes in the drum and the bar placed in the guide *b*, which opens, as seen in one of them in Fig. 2, for that purpose, and when the drum is released the spring will force the needle-bar against the pin *c*, which forms one side of the guide *b*. The guides *b* are arranged upon the plates *d*, to which are attached the arms *e*, extending out to indicators *f*, a pin in said arms fitting into the holes in said indicators, so that as the plates *d* are turned in one direction or the other they cause the guides *b* to stand at a greater or less angle of inclination to the needle-bars and allow said needle-bars more or less throw or play, which regulates the length of the stitch, as will be hereinafter described in connection with the pulley and falling weight for drawing through the cloth.

The needles 1 2 are arranged in the needle-bars in any well-known manner, so as to be readily removed and replaced, and the thread for supplying the needle 1 passes from the bobbin L through a guide, *i*, on the rear end of the needle-bar down through the needle-holder *g*, and passes along underneath the needle in a groove made therein for the purpose of insuring the forming of the loop in the exact position for being taken up by the other needle, and thence up through the eye of the needle, which is near the point thereof, as seen in Fig. 2. The thread of the other needle, 2, passes in a similar manner from another bobbin through a guide, and down through

the needle-holder, coming out on top of the needle, and resting in a slight groove in said needle, and thence down through the eye of the needle, which is also near the point, as is distinctly seen in the drawing, Fig. 2, where the red lines denote the threads. It is obvious that where the needles are sewing in a straight line, and crossing each in the formation of each stitch, the loops of thread must be formed one on top of one needle and the other underneath the second needle, so as to insure its being caught up, and the obliquity given to the needles need only be sufficient to pass through the loop in the thread, which of necessity is parallel with the needle.

The bobbins L may rest upon spiral or other springs, *h*, and are pressed down upon said springs by means of a thumb-screw, *k*, to give the necessary tension to the threads. M M are cloth-guides, which are made adjustable by means of set-screws *m* passing through slots *n* therein, to receive the various material to be sewed, and the ends of said cloth-guides where they approach each other are turned up, and provided with openings for the needles to play through, the sewing-point being between said guides.

I have arranged on the bed, for convenience, an upright, N, having a pulley in its top, on the same plane with the needles, over which passes a cord, *o*, having a weight, O, attached to one end and a hook, *p*, on the other, which, when any material is to be sewed, is hooked into the ends thereof, as seen in the drawings, and which weight, as the needles are alternately drawn back out of the cloth, pulls forward the cloth and the needle and its bar then in it until the bar strikes against the opposite side of the guide, and the extent of this motion of the bar regulates the length of the stitch. The standard or upright N should properly be placed on the extreme end of the table, so that the weight may have a greater distance to fall; or, instead of the weight, a spring might be used to accomplish the same end. I have described the spring for throwing back the needle-bar as being coiled in the drum K. It may be a straight spring and arranged alongside or parallel with the bar; or the needle-bar itself may be the spring, it being only necessary, after the needle-bar has been drawn back out of the cloth, to throw it far enough toward the cloth which is being fed in to form the next stitch, which in turn is drawn forward, released, and so on. The stitch is known as the "chain-stitch," and is represented on an enlarged scale at Fig. 4, the two threads having a double lock with each other, and in practice almost every alternate stitch may be cut or broken, and yet the material will not separate, or, as it is termed, "rip out."

I purpose applying a modified form of this machine, though I do not now claim it, by using curved needles, one of which shall pass through the cloth twice—that is, the point of the needle shall return back to the same side of the material at which it entered, and remain long enough to pass the other needle through the curve in the first one, and then withdraw it, and so by repeating the operation sew the seams of sails, awnings, &c., by a whip-stitch, which will hold down the edges of the material.

P is a standard, to which is secured by a set-screw a slotted arm, *q*, on which the main pulley D has its bearing, and by means of said slot and screw the band or belt which passes from one pulley to the other may be tightened up to any proper degree of tension.

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

1. In combination with the needle-bars J, the spring-holders K and adjustable guides *b*, through which said bars pass for the purpose of regulating the length of the stitch, substantially as herein described.

2. In combination with the apparatus for regulating the length of the stitch, the weight or its equivalent for drawing the cloth forward as it is alternately released from the needles, by which means the feed motion is regulated and made dependent on the length of the stitch, substantially as described.

OTIS AVERY.

Witnesses:
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