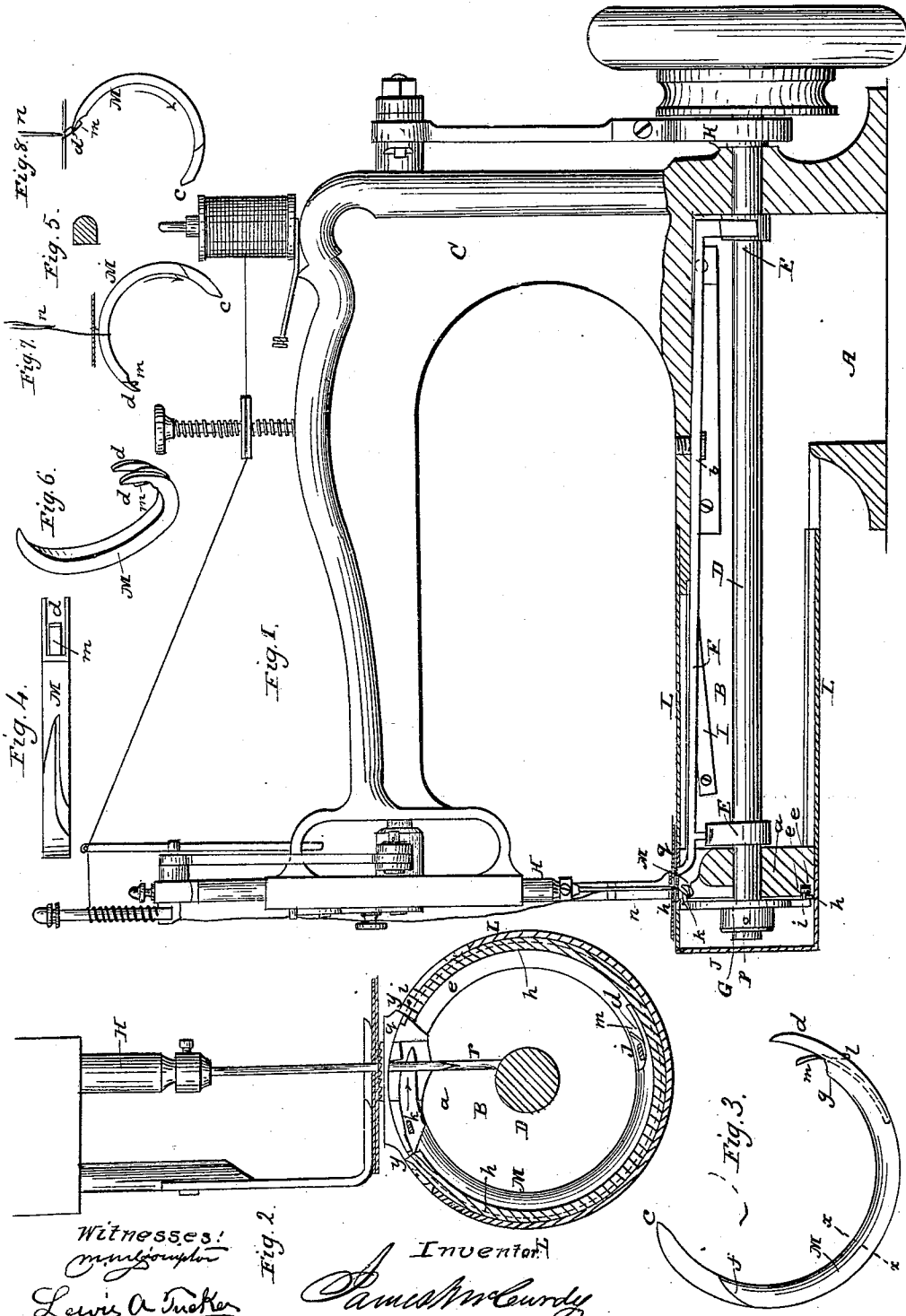


J. S. McCURDY.  
Sewing Machine.

No. 38,931.

Patented June 16, 1863.



Witnesses:  
*Samuel Thompson*  
*Lewis A. Tucker*

Inventor:  
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# UNITED STATES PATENT OFFICE.

JAMES S. McCURDY, OF BROOKLYN, NEW YORK, ASSIGNOR TO ELIAS HOWE, JR., OF SAME PLACE.

## IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. 38,931, dated June 16, 1863.

To all whom it may concern:

Be it known that I, JAMES S. McCURDY, of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Sewing-Machines; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a front view of a machine with my improvements. Fig. 2 is an enlarged left-hand end view of the principal operating portions of the same with the cap of the cylinder and the looper-driver removed. Fig. 3 is an enlarged view of the inner side of the looper. Fig. 4 is an edge view of the same. Fig. 5 is a transverse section of the same in the line  $x x$  of Fig. 3. Fig. 6 is a perspective view of the same. Figs. 7 and 8 are views of the needle and looper, illustrating the operation of making the stitch.

Similar letters of reference indicate corresponding parts in the several figures.

This invention relates to single-thread sewing-machines making a chain-stitch, and to the use in such machines of a revolving detached or independent looper.

It consists in furnishing such looper with a spring, operating as hereinafter described, to aid in forming the stitch; also, in a certain device for confining such looper in its circular raceway.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

A is the stand of the machine, made with a cylinder, B, for the support of the cloth.

C is the stationary arm.

D is the main shaft, running through the center of the cylinder B, working in a bearing in the solid end  $a$  of the cylinder and another bearing at the opposite end of the stand, and furnished with an eccentric, K, or other device for working the reciprocating eye-pointed needle  $n$ , two cams, E E', for operating the feed-bar F, and a disk, G, for driving the looper. The needle-bar H may have the necessary motion imparted to it from the eccentric K, or other contrivance on the main shaft, by any suitable means. The feed-bar F is arranged as a lever to work on a fulcrum-pin,  $b$ ,

within the cylinder and to feed across the cylinder. The cam E operates to raise the feeding end of the lever F to make it take hold of the cloth, and the cam E' operates to produce the feed movement. The feeding end of the lever is caused to descend to liberate the cloth by its own elasticity, and the return horizontal movement of the bar is produced by a spring, I, secured within the cylinder, the interior of which is reached by drawing off the cap J, which covers its end, and the sleeve L, which covers a wide slot extending nearly its whole length.

M is the revolving detached or independent looper, fitted to revolve easily in a circular groove,  $e$ , formed in the solid end  $a$  of the cylinder B, concentric with the said cylinder and main shaft. This looper is an arc of more than half a circle, as shown in Figs. 1 and 2, pointed at one end,  $c$ , and forked at the other end,  $d$ , and has its transverse section of half-round form, as shown in Fig. 5; the rounded portion being inside. On its outer face—that is to say, the face which is toward the mouth of the groove  $e$ —there is formed, not far from its point, a rounded shoulder,  $f$ , and its forked end is cut away on the inside of the arc to form a heel,  $g$ , beyond which the fork projects. A groove,  $l$ , extends from the fork a short distance along the outer convex side of the arc, and within this groove there is secured a light curved spring,  $m$ , which projects from the heel and fork, as shown in Figs. 2 and 3.

$h$  is a thin steel plate of the form of a ring, with about one-sixth of its circumference cut out, as shown at  $y y$  in Fig. 2, having its external diameter the same as that of the cylinder B and its internal diameter somewhat smaller than the diameter of the outer circle of the groove  $e$ . This plate has near its extremities two small holes, which fit to two small pins,  $i i$ , secured in the end of the cylinder to keep it in position to confine the looper within the groove  $e$ . The said plate is held up to its place by the disk G, which drives the looper. This disk is furnished with a pin,  $j$ , which protrudes from its inner side to act against the heel  $g$  of the looper for the purpose of driving the latter in sewing, and the said disk is furnished with a second pin,  $k$ , to act against the shoulder  $f$  of the looper to turn the latter backward whenever necessary. The looper-driving disk G is

put on the shaft D after the looper and plate *h* are put in their places, and is secured to the shaft by a pin, *p*, passing through its hub and through the shaft, and when thus secured it keeps both the plate *h* and the looper in place. The plate *h* keeps the looper out of contact with the disk, and the opening *y y* in the said plate affords ample room for the loops to pass from between the disk and the looper.

*q* is the steel needle-plate, secured to the cylinder over an opening provided in the upper part of the same opposite the opening *y y* in the plate *h*. The movable cap J of the cylinder covers up the looper-driving disk and the plate *h*.

The needle *n* is not situated directly over the axis of the looper-shaft, but a little in front of it, and a groove, *r*, is provided for its reception in the solid head *a* of the cylinder.

The operation of the machine is as follows: When motion is communicated to the main shaft the looper revolves uninterruptedly in the direction of the arrow shown on it in Fig. 2, making one revolution for every complete movement of the needle up and down. After the needle has completed its descent and commenced to rise the point of the looper enters between it and the thread, as shown in Fig. 2, and the continued rise of the needle causes the loop to be formed around the advancing looper, as shown in Fig. 7. When about two-thirds of the length of the looper has passed through the loop, as shown in Fig. 7, the needle completes its ascent and commences descending again, the feed movement of the cloth having in the meantime taken place in the opposite direction to that in which the looper passes through the loop. Just as the point of the needle passes through the cloth in its descent the heel *g* of the looper passes out of the loop, which then slips onto the fork *d*, which keeps it spread open laterally, while the curved spring *m* catches it and draws it longitudinally forward in the opposite direction to that in which the feed of the cloth has taken place,

as shown in Fig. 8, and the needle, descending through the groove *l* and fork *d* of the looper, cannot fail to pass through the loop. After this has been done the continued revolution of the looper draws the spring and fork out of the loop, the spring yielding to allow the loop to escape between it and the inner circumference of the groove *e*. The loop, after escaping, is drawn up to the cloth by the continued descent of the needle to form the next stitch, but the stitch is not completely tightened till a second loop has been taken from the needle by the looper, and is then tightened by the completion of the next upward movement of the needle.

In the above operation it will be understood that the looper passes through the loops of the needle-thread in precisely the same manner as a shuttle passes through the loops of the needle-thread in a shuttle sewing-machine.

This kind of looper may be used under a flat bed by providing a raceway in an upright plate constructed like the solid end *a* of the cylinder and secured under the bed. It however possesses especial advantages for use in machines having cylindrical support for the cloth or other material to be sewed.

I do not claim a revolving looper which is not entirely detached from other parts of the machine; but

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The spring *m*, applied to the detached or independent revolving looper, substantially as and for the purpose herein specified.

2. The plate *h*, applied in combination with the revolving looper and the looper-driving disk G, substantially as and for the purpose herein specified.

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Witnesses:

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