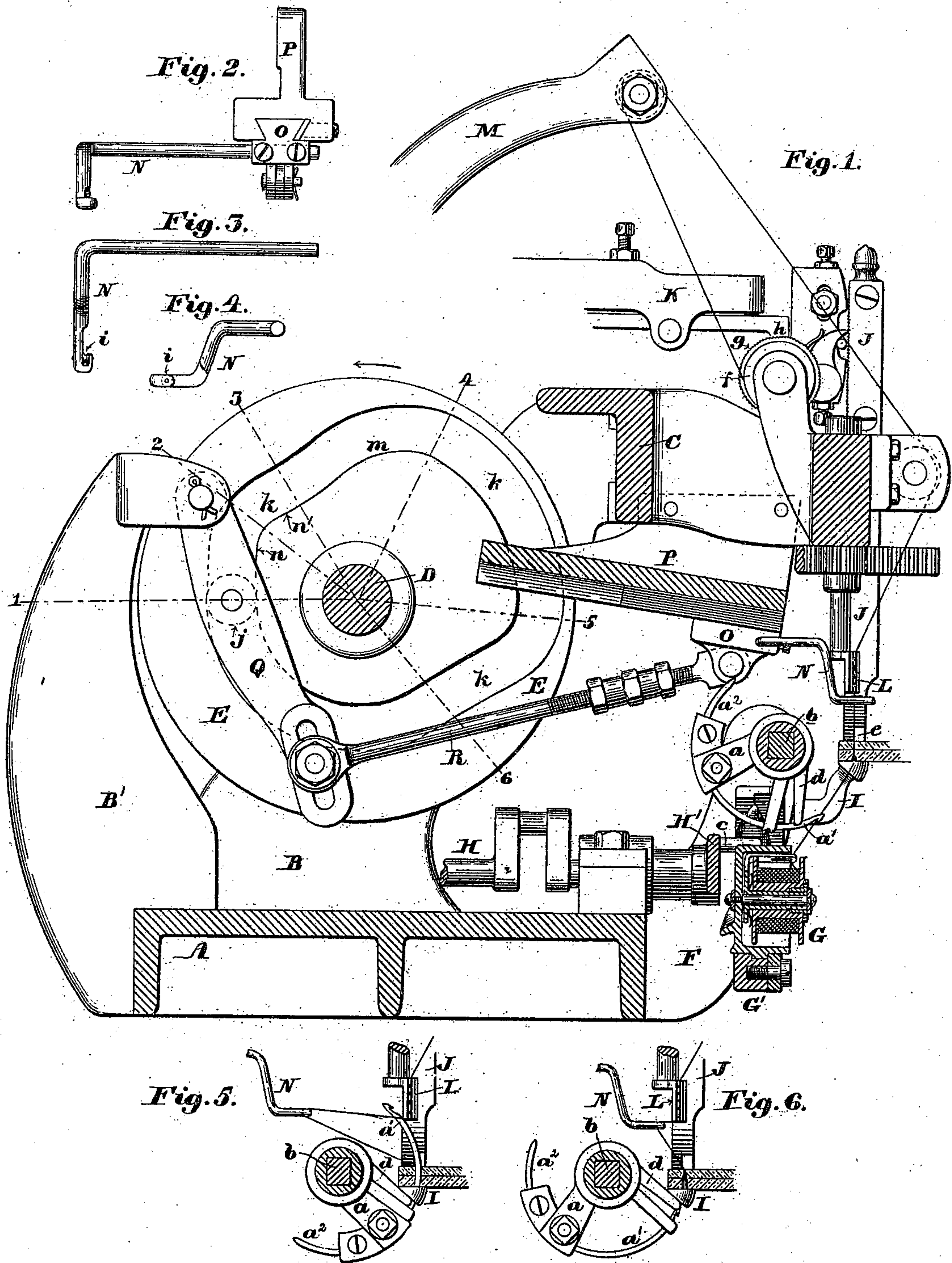


(No Model.)

J. E. BERTRAND.  
SEWING MACHINE.

No. 502,874.

Patented Aug. 8, 1893.



**Witnesses:**  
Walter E. Lombard  
W. C. Lombard

**Inventor:**  
Joseph E. Bertrand,  
by N. C. Lombard  
Attorney.



# UNITED STATES PATENT OFFICE.

JOSEPH ELI BERTRAND, OF BOSTON, ASSIGNOR OF ONE-HALF TO MELLEN BRAY, OF NEWTON, MASSACHUSETTS.

## SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 502,874, dated August 8, 1893.

Application filed March 15, 1893. Serial No. 466,127. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH ELI BERTRAND, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and  
5 useful Improvements in Sewing-Machines, of which the following, taken in connection with the accompanying drawings, is a specification.

My invention relates to sewing machines and particularly to that class of such machines as is used for sewing leather and to  
10 the devices for drawing out the loop of thread above the work and tightening the stitch, is an improvement upon the machine described in the Letters Patent No. 432,011, granted to  
15 me July 15, 1890, and it consists in certain novel features of construction, arrangement and combination of parts which will be readily understood by reference to the description of the accompanying drawings and to the  
20 claim hereinafter contained and in which my invention is clearly pointed out.

Figure 1 of the drawings is a vertical transverse section of a sewing machine, in general substantially like that described in said prior  
25 patent, the cutting plane being on an irregular line and showing the parts more nearly relating to my present invention in elevation. Fig. 2 is a front elevation of the loop measuring and stitch tightening finger and its carrier. Fig. 3 is a plan of said loop measuring  
30 and stitch tightening finger. Fig. 4 is a side elevation of the same. Fig. 5 is a diagram illustrating the position of the loop measuring and stitch tightening finger when the loop of thread has been drawn out above the work  
35 and the needle is in position to seize the upper thread, and Fig. 6 is a similar view showing the same parts when the stitch has been tightened and the lock of the stitch drawn  
40 into the work.

In the drawings A is the bed plate of the head of the machine, B is one of the end frames, C the upper tie girt, D the cam or  
45 main operating shaft mounted in suitable bearings in said frames B, and E is the cam for operating the loop measuring and stitch tightening finger.

F is one of the two stands secured to the front of the bed A, in bearings in the upper

ends of which is mounted the shaft *b* having  
50 mounted thereon the needle and awl carrier arm *a*, as shown in Figs. 1, 5 and 6.

G is the shuttle mounted in the race G', H is the shuttle operating shaft and H' *c* the  
55 shuttle carrier.

I is the work support, *c* is the needle guide, *d* is the loop opener, *e* the presser-foot, J the  
60 presser-foot-bar, *f* the thread tension wheel, *g* the ratchet wheel connected to said tension wheel, *h* the pawl and K the pawl lever for locking said tension wheel, L the thread carrier for throwing the thread into engagement  
65 with the barb of the needle *a'*, and M the take up lever.

So far the several parts except the cam  
70 E and the needle and awl are constructed and arranged substantially as shown and described in said prior patent before cited. In said prior patent the loop measuring finger  
75 was pivoted to a reciprocating cross-head fitted to and movable in a groove formed in the bed and arranged to vibrate about its pivotal connection as it was moved toward and from the  
80 front of the machine, said looper finger serving only one purpose, that of measuring the length of loop of thread required for the needle to draw through the work to form the  
85 loop below the work through which the shuttle was to pass, the stitch being drawn tight by the take-up lever. This arrangement worked fairly well but I have found by actual  
90 test, that, in order to properly tighten the stitch and draw the lock of the stitch into the work so as to show a fair stitch on both sides of the work, it is better to apply the  
95 power, to do this, to the thread at a point much nearer the work than the end of the take up lever. To effect this desirable object is the aim of my present invention and to this end I construct, arrange, and operate the  
100 looper finger as shown in the accompanying drawings, in which N is the looper finger made in the form shown in Figs. 2, 3, and 4 and having mounted in its hook end the  
105 small grooved wheel or sheave *i* the grooved periphery of which engages the thread to pull out the loop of thread above the work as  
110 shown in Fig. 5.



The looper finger N is mounted in a socket in the cross-head O fitted to and movable endwise in a dovetailed groove formed in the under side of the stand P bolted to, and pendent  
5 from, the tie girt C with its lower or grooved side oblique to a horizontal plane so that the finger N has a slight upward movement as it is moved toward the rear as shown in Fig. 1.

B' is a stand bolted to the rear edge of the  
10 bed A and having pivoted to its upper end the lever Q to the slotted lower end of which is adjustably pivoted one end of the link R, the opposite end of which is pivoted to the cross-head as shown in Fig. 1.

The lever Q has mounted on a stud set therein a truck *j*, shown only in dotted lines in Fig. 1, which fits into, and is acted upon by, the path *k* of the cam E to move said cross-head and the looper-finger toward and from  
20 the rear of the machine.

The cam E is different from the cam for operating the looper finger in my said prior patent in that besides the throw *m* for measuring the loop it is provided with the short outward and inward throws *n* and *n'* between the  
25 lines 1 and 2 and 2 and 3 respectively the throw *n* serving to move the finger N backward a short distance, after the take-up lever has drawn up the slack of the lower loop, so  
30 as to tighten the stitch and draw up the lock of the stitch into the work, the sheave or truck *i* engaging the thread between the work and the thread carrier L and drawing it into the position shown in Fig. 6, this being done while  
35 the tension wheel *f* is locked by the pawl *h* and the take up lever M is held firmly, in the position shown in Fig. 1, by the cam for operating it, not shown in the drawings.

For information regarding parts of the machine not shown in the accompanying draw-

ings reference may be had to the before cited prior patent.

The needle  $\alpha'$  and awl  $\alpha^2$  are mounted in separate radius arms with their points in opposite directions as shown and described in  
45 another application of mine, filed September 17, 1892, Serial No. 446,207.

The operation of my invention will be readily understood from the foregoing without  
50 further description here.

A great advantage is obtained by imparting the additional short throw to the looper finger for drawing the lock of the threads into the work and tightening the stitch, and also by the employment of the sheave *i* on the hook  
55 end of the looper finger, by very much lessening the chafing of the thread.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

In a sewing machine the combination with  
60 a work support and presser foot, a needle and awl constructed and arranged to be reciprocated about a common axis and a rotary shuttle, of a loop measuring and stitch tightening finger mounted in a reciprocating cross-head,  
65 a pivoted lever, a link connecting said cross-head to the movable end of said pivoted lever, and a cam provided with a path having two outward and two inward throws adapted to impart to said looper finger a long and  
70 short rearward and forward reciprocation.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 10th day of March, A. D. 1893.

JOSEPH ELI BERTRAND.

Witnesses:

N. C. LOMBARD,  
H. T. CROSBY.