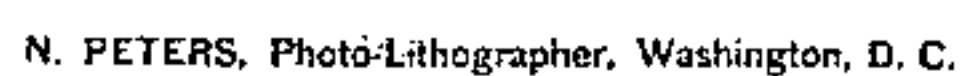


## Sewing Machine.

Patented Nov. 30, 1858.





# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. **22,160**, dated November 30, 1858.

*To all whom it may concern:*

Be it known that we, S. S. BURNET and WM. BRODERICK, of Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Sewing-Machines; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a side view of a sewing-machine constructed with our improvements, a portion of the frame being shown broken out. Fig. 2 is a vertical section in the line *x x* of Fig. 1.

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

The nature of our invention consists, first, in the employment of the rocker, in combination with the crank of the driving-shaft and with the needle bar or slide, in the manner substantially as specified, for giving the required motions to the needle-bar to accomplish a perfect formation of the loop, interlocking of the two threads, and the formation of the stitch on the cloth; second, in the employment of an auxiliary adjustable thread-guide, in combination with the rocker-arm and stationary thread-guides, in the manner substantially as hereinafter specified, for the purposes of governing and adjusting the amount of thread for each stitch; third, in the employment of the circular friction-plate or its equivalent with or without index-pointer, in combination with the thread-guides, substantially as hereinafter specified, for the purpose of causing a greater or less tension upon the upper or needle thread; fourth, in the employment of a vertical sliding unyielding pressure-bar formed of two pieces, which are right and left screw-tapped and coupled together by an adjustable link-nut, in combination with a jointed pivoted feeding and holding-down pad and a vertically and laterally acting cam of the rocker, in the manner substantially as hereinafter specified, for the purpose of effecting the feeding and holding down of the cloth without the aid of a spring-pressure pad, and also facilitating and conveniencing the adjustment of the feeding-pad to receive or to suit different thicknesses of cloth to be sewed.

To enable others skilled in the art to make

and use our invention, we will proceed to describe its construction and operation.

A represents the frame of the machine. It may be of any suitable form.

B is the needle, attached to a vertically-sliding bar, C, which is arranged above the top of the table, as usual.

D is the shuttle, arranged in a race, E, below the table, in the usual manner. The combination between the needle and the shuttle in a manner to have each perform its proper functions at the proper times is effected by means of rocker F, connecting-rods G H, crank, I J, rocking-shaft K, and connecting-rods L M, said parts being properly constructed with slots *a a*, arms *b b*, and pins *c c*, which arms are set at right angles to each other to allow for the necessary movements of the shuttle and needle, and all arranged substantially as shown in the drawings.

The parts above named, with the exception of the rocker F, form no part of our claim, except so far as their combination with the features we shall now proceed to describe go, and therefore will not require a more minute description.

The rocker F is designed as a substitute for the noisy cam and other complicated devices generally adopted for producing the proper movements of the needle so that it, in conjunction with the shuttle, shall effect a perfect formation of the loop, and at the same time allow the shuttle time to pass through the loop before the loop is drawn tight, and thereby accomplish the interlocking of the two threads and the drawing of the stitch tight on the cloth, said rocker, by a continuous revolution of the crank I, giving the needle the proper complete downward movement, as shown in red lines in Fig. 1, to supply the thread necessary to form a loop, the necessary partial upward or return movement, as shown in black lines in Figs. 1 and 2, to effect the looping of the thread thus supplied, so as to admit the point of the shuttle, the second descent of the needle, as shown in black lines in Fig. 1, so as to open and spread the loop for the free passage of the shuttle through it and the consequent interlocking of the needle and shuttle threads, and the necessary complete upward movement of the needle, as shown in



blue lines in Fig. 1, to accomplish the perfect formation of the stitch upon the cloth.

$N$   $N'$   $N^2$   $N^3$   $N^4$   $N^5$  are guides and tension adjusters for controlling the passage of the thread from the spool  $P$  to the needle  $B$ . The guides  $N$   $N^5$  are arranged on the connecting-rod  $G$  of the needle bar and rocker, the guide  $N$  being made adjustable by means of the slot  $d$  and set-screw  $e$ , as shown. By thus arranging the guide  $N$  so as to move with the rocker the amount of thread supplied to the needle for the formation of each loop can be governed very perfectly, and the amount can be increased or decreased, as desired, as will be evident from the following: When the rocker  $F$  assumes the position shown in blue, sufficient thread will have been drawn from the spool to form the loop, and said thread thus drawn from the spool will become slack and descend with the needle when the rocker assumes the position shown in red. By raising the guide  $N$  the quantity drawn out from the spool will be increased, and by lowering the guide the quantity will be lessened. Thus a perfect control of the supply of thread to suit the necessities of the case is effected. The guides  $N'$   $N^2$   $N^3$  are stationary, and are not peculiar in their operation, except in connection with the circular friction-plate  $N^3$  and spring tension-bar  $N^4$ , they serving in this connection to keep the thread in proper position no matter what may be the adjustment of said devices. The tension-plate  $N^3$  is pivoted to the frame at  $y$  by means of a screw-tapped set-pivot, and can be adjusted in the path of a vertical circle, so as to present more or less surface for the thread from the spool to come in contact with, as illustrated in the drawings. By having the friction-plate occupy the position shown in black the thread will come in contact with the whole length of its circumference, and thus the tension on the thread will be considerable; but by adjusting the said plate to the position shown in blue the thread will only come in contact with a small portion of its circumference, and thus the tension upon the thread will be comparatively slight. An index-pointer,  $f$ , may be attached to the friction-plate, and a scale,  $g$ , marked on the frame  $A$ , so that the exact tension shall be made known. The intermediate spring-guide,  $N^4$ , keeps the thread properly distended between the tension-plate and guide  $N'$ , and at the same time allows of the tension-plate being adjusted, as just described.

$O$  is the feeding-bar, with serrated plate  $o$  jointed to it. This feeding-bar is pivoted to the frame at  $W'$ . Its upper end is bent at right angles and extends up, so as to be struck and forced aside laterally by an incline plane,  $t$ , on the bearing-box  $h$  of the rocker, in a manner to effect the throwing of the feeding-plate forward and the consequent feeding of the cloth.

$P'$  is a pressure-bar. It is coupled with the feeding-plate by means of an angular projection or pin,  $i$ , on its lower end, and a slot,  $i'$ ,

in the extension  $j$  of the feeding-plate  $o$ . This pressure-bar is formed of three pieces,  $l$   $m$   $n$ . The part  $m$  is furnished with a right-hand screw-cap at its lower end, and the part  $n$  with a left-hand screw-cap at its upper end. The part  $l$  is a link-nut coupling the two parts together and adjusting them very perfectly and expeditiously as two different screw-threads are brought into action at the same instant, one elevating or lowering the nut while the other is elevating or lowering the feeding-plate. This pressure-bar is furnished with a shoulder at  $p$ , so that it shall not rise above a certain distance. It is also furnished with a spring,  $q$ , for lifting it and the feeding-plate when an upward adjustment has been made by the nut, and especially for throwing the feeding-plate upward when it is moving back for a fresh feed. This spring is not, nor is any other, employed for exerting a spring-pressure upon the cloth, for it is our design to avoid the use of such a pressure by substituting therefor an adjustable positive pressure-bar, working as just described. A combination between the rocker and the pressure-bar is effected by giving an angular bend,  $r$ , to the upper end of said bar, and providing a cam or projection,  $s$ , on the bearing-box of the rocker, as shown, said cam or projection being beveled off on its rear side, so as to present an incline plane,  $t$ , for forcing out laterally the upper end of the feeding-plate in a manner to effect the feeding of the cloth, and simultaneously therewith depress the pressure-bar and cause it to hold the cloth down firmly while the feeding is being performed. The extent of the movement of the feeding-plate is regulated by means of a set-screw,  $Q$ , in the ordinary manner.

We do not claim the arrangement of spring pressure-pad shown in the patent of A. H. Boyd, said arrangement employing a spring for keeping the pad in contact with the cloth, while we employ a spring simply for throwing the pad out of contact with the cloth.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. The employment of the rocker  $F$ , in combination with the cranks  $I$   $J$  of the driving-shaft, and with the needle bar or slide  $C$ , in the manner substantially as specified, for giving the required motions to the needle-bar to accomplish the formation of the loop, and at the same time allow the shuttle time to pass through the loop before the loop is drawn tight, and thereby accomplish the interlocking of the two threads and the drawing of the stitch tight on the cloth, as set forth.

2. The employment of an auxiliary adjustable thread-guide,  $N$ , in combination with the rocker  $F$  and stationary thread-guide  $N'$   $N^5$ , in the manner substantially as herein specified, for the purposes of governing and adjusting the amount of thread for each stitch.

3. The employment of the segment friction-plate  $N^3$ , hung on a horizontal axis, and con-



structed and operating, as described, with or without index-pointer *f*, in combination with the thread-guides *N' N<sup>2</sup>*, substantially as herein specified, for the purpose of causing a greater or less tension upon the upper or needle thread.

4. The employment of a vertical sliding unyielding pressure-bar, *P'*, formed of two pieces, *m n*, which are right and left screw-tapped and coupled together by an adjustable link-nut, *l*, in combination with a jointed pivoted feeding

and holding-down pad *O o*, and a vertically and laterally acting cam *s t* of the rocker, in the manner substantially as herein specified.

The above specification of our improvement in sewing-machines signed by us this 28th day of June, 1858.

SERRINGTON S. BURNET.  
WM. BRODERICK.

Witnesses:

R. PARKER PIERCE,  
R. H. MORFORD.