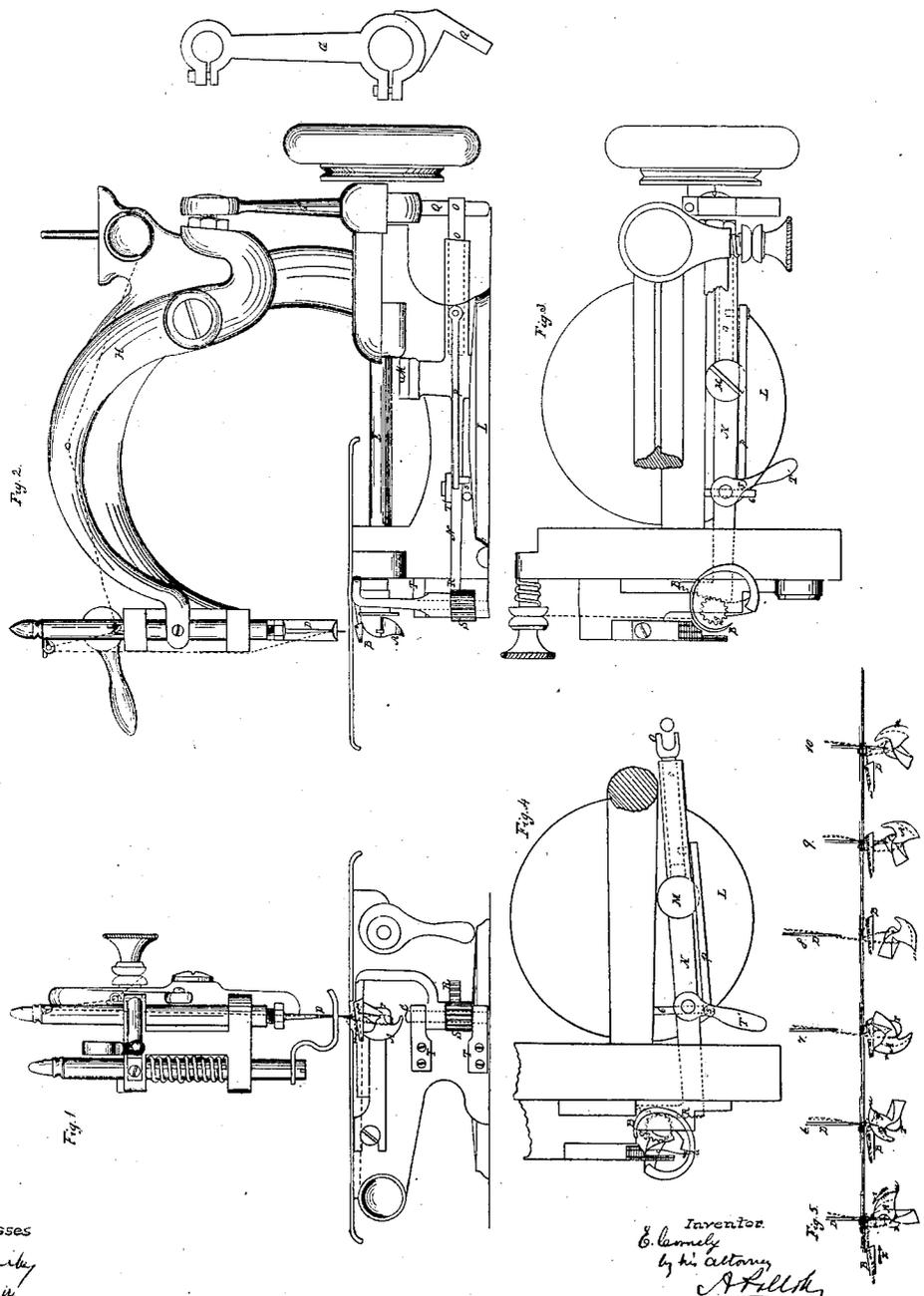


E. CORNELY.
SEWING MACHINE.

No. 73,696.

Patented Jan. 28, 1868.



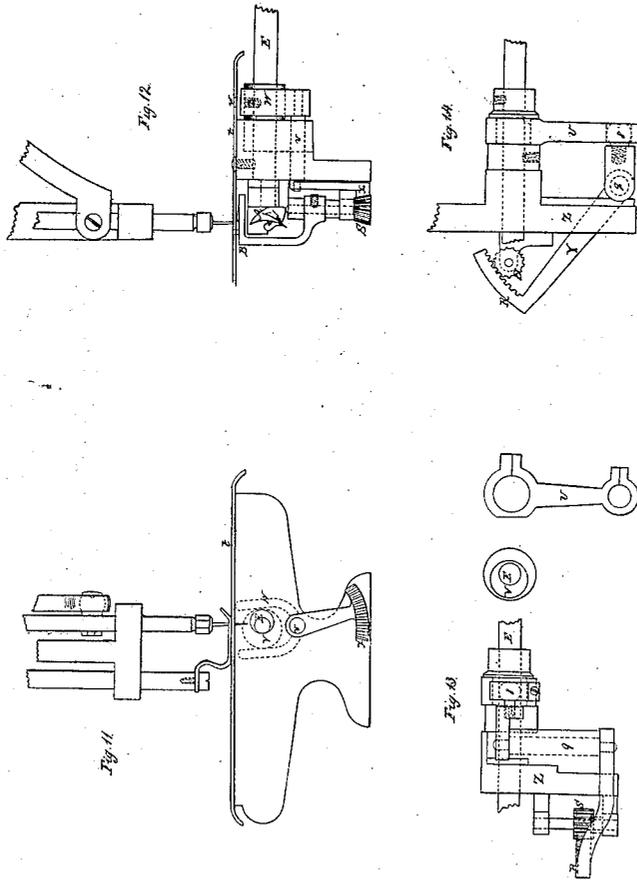
Witnesses
B. S. ...
C. ...

Inventor
E. Cornely
by his attorney
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C. ...

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United States Patent Office.

EMIL CORNELY, OF WASHINGTON, DISTRICT OF COLUMBIA.

Letters Patent No. 73,696, dated January 28, 1868.

IMPROVEMENT IN SEWING-MACHINES.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, EMIL CORNELY, of the city of Washington, in the District of Columbia, for the time residing at the city of Paris, Empire of France, 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 construction and operation of the same, reference being had to the accompanying drawings, in which—

Figure 1 represents a front elevation of the machine.

Figure 2, a side view thereof.

Figures 3 and 4 represent top views of the lower part of the frame of the machine, showing also parts of the mechanism.

Figures 5, 6, 7, 8, 9, and 10, represent various positions of the two loopers, for making the seams, as herein described.

Figures 11, 12, 13, 14, are detail views, hereafter to be referred to.

My invention consists in certain modifications to the sewing-machine known as the Willcox and Gibbs sewing-machine, by the means of which (without changing the principle of said machine, and without changing materially its original construction,) the twisted loop-stitch, as well as the Grover and Baker stitch, can be made at the pleasure of the operator.

The principal element of the Willcox and Gibbs sewing-machine is its revolving hook or looper for making the single-thread stitch, and upon said looper is founded the superiority of the machine, as by its means it not only is less liable to drop stitches, but a great speed also may be attained, as all the movements of the machine are effected by circular eccentrics or crank-motions, in contradistinction to irregular eccentrics or cam-motions, which permit of no great speed. These advantages I have preserved in connection with my improvements for making the single as well as the double-thread stitch.

The first modification which I make on the Willcox and Gibbs machine is that I increase in proportion the length of the looper in the direction of its geometrical axis, which increase or enlargement is necessary for making the double-thread stitch in connection with a reciprocating looper, but by said increase the principle of the original looper is not changed, and the looper therefore performs its work with the same regularity, speed, and perfection for making the single-thread seam, as on the ordinary Willcox and Gibbs machine.

The original Willcox and Gibbs sewing-machine being well known, a description thereof is here deemed unnecessary.

I have found by experiments that, by making a projection, *r*, upon the Willcox and Gibbs looper, A, and by increasing its volume in the direction of its axis, as above described, the said looper will make the single-thread stitch, as heretofore, when working by itself, but, when working in combination with an auxiliary and reciprocating threaded looper, B, the latter will displace the needle-thread on the looper A, in such a manner that the needle, on descending, will not enter the loop of its own thread, as it does when making a single-thread stitch, but into the extended loop of the reciprocating looper B, the operation resulting in the formation of the double-thread stitch, known as the Grover and Baker stitch.

The movement of the reciprocating looper B is effected in the following manner: A horizontal lever, N, pivoted by means of the pin M upon the frame L of the machine, has its rear portion formed into a sleeve, for the reception of a rod, O, which is so arranged as to be capable of having a sliding as well as a limited rotary motion. To the connecting-rod G, which connects the eccentric on the shaft E with the needle-arm H of the machine, I attach (or form with it) a pin or stud, Q, which enters the fork-shaped end *o* of the rod O, and thus drives said lever, by giving it a horizontally-vibrating movement upon its vertical pin M. To the front end of the lever N is secured a rack, R, which drives a pinion, S, on the vertical shaft C, to which is also secured the horizontally-oscillating looper B. The shaft C is supported by brackets T.

The operation of the two loopers, in combination with the needle, is as follows: When the needle D commences to rise from its lowest position, a loop is formed, into which enters the point of the looper A, fig. 5, turning in the direction of the arrow 1, the horizontal looper B begins its movement in the direction of the arrow 2, the looper A spreads the loop of the needle-thread, (marked in red lines,) and the threaded looper B (its thread being marked in blue) enters the spread loop of the needle-thread, figs. 6 and 7, and passes through it to the

end of its course, as seen in figs. 1 and 8. The needle, which has been rising while the operation last described was being effected, now descends and enters the spread loop of the blue thread, fig. 1, and, when it has entered therein, the looper B commences to recede, as shown in figs. 9 and 10, its thread surrounding the needle, and being itself within the loop of the needle-thread. During all this time the looper A continues to revolve, and its operation recommences as shown at fig. 5.

By the above description it will be seen that the looper A is used for taking the loop from the needle and for spreading the same, while the looper B is used only for entering into the spread loop of the needle-thread, and in its turn for spreading its own thread, so that the needle on descending may enter the loop of the looper B.

The question may be asked, what advantage is obtained in performing the above-described operation by means of two loopers, inasmuch as the same stitch has been produced heretofore by means of one looper only? To this I answer, that by using the two loopers, as above described, I can operate each looper by means of a circular, eccentric, or crank-motion, and without changing said movement into an irregular one, as must be done when one looper only is used, in combination with a needle for producing the double-threaded stitch, as above described.

The other advantage is that, in arresting the motion of the horizontally-oscillating looper B, the looper A, working singly, will make the single-thread seam, as does the original Willcox and Gibbs machine, and thus the machine can make two different stitches, and still possess all the advantages of speed, noiselessness, facility of movement, durability, and the use of a short needle, as heretofore.

It will be observed from the above description that not even a new eccentric is added to the original Willcox and Gibbs machine for driving a horizontal looper, B, but that the eccentric which operates the needle-arm of the machine also serves for operating the lever N, which drives the looper B, but as the movement of said looper does not correspond with the horizontal motion which the eccentric of the machine would give if the pin Q were in line with the connecting-rod G, I have given to the pin Q an inclined position, so that the eccentric of the machine may act vertically as well as horizontally upon the lever N, and thus I have succeeded in suitably timing the movement of the looper B, in relation to the movement of the looper A and of the needle D.

By reference to fig. 6, it will be observed that, when the point of the looper A has taken the loop x of the needle-thread, and is continuing to revolve, the preceding loop y , which has been upon the looper, now slides over the rear hook of said looper previous to being released, during which operation the looper B advances, and its point would enter the loop y and break the thread thereof, were it not that said loop is kept away from the path of the looper B. To effect this I have formed a ridge, m , upon the looper A, which ends rearwards into a point, u . The entire ridge m lies outside the course of the looper B, and therefore retains the loop y , so that the looper B can in no manner enter or even derange the same.

When it is desired to sew with one thread only with the machine, the lever N must not only be uncoupled but it must also be held in a fixed position, so that the looper B is kept outside of the path of the looper A, as represented at fig. 4. To effect this I have constructed a coupling, which can be operated at the moment only when the looper B is in the position represented at fig. 4, as will be understood from the following description:

p represents a slide or rod, which is adjusted upon the lever N, in such a manner that it can be operated thereon longitudinally by shifting the lever T'. The end of the rod p is pivoted to the rod O, fig. 2, and consequently the latter moves longitudinally with the slide p , whereby it can be disconnected from the pin Q, as shown at fig. 4, and consequently in that position the lever N, the gears, and the looper B remain stationary. I have provided the slide p with a projecting stud, 5, just in rear of the pin 6 on the frame of the machine, in order to prevent the slide p from being operated unless the stud 5 be outside of the pin 6, as shown at fig. 4, and then only the lever N can be uncoupled.

I have found, by experimenting, that by increasing the bulk of the looper A at r , beyond what I have done as above described, the needle-thread on said looper is displaced in such a degree that the needle on descending will fail to enter into its loop, and that such a looper will therefore never make a single-thread stitch or seam, but can be used only in combination with a reciprocating looper for making the double-thread stitch.

I have described above the mechanism which serves for operating the oscillating looper B, by means of an eccentric, which already does exist on the original Willcox and Gibbs machine; but I do not confine my invention to that arrangement, inasmuch as a special eccentric may be secured on the shaft E for operating the looper B, and even the small eccentric of said shaft, which operates the feed-bar, may be used for that purpose.

To illustrate, I will give the description of another construction, which is operated by means of an eccentric secured to the shaft E. As shown at figs. 11 and 12, a regular eccentric, V, is secured to the shaft E, and a fork-shaped piece, W, pivoted to the shaft v , is vibrated by means of the eccentric V. The arm of a toothed sector, X, is secured to the shaft v , and communicates its movement to the pinion S and to the looper B, which results in the movement above described. The coupling and uncoupling in this case may be effected by means of a screw, Z, which fixes the eccentric V to the shaft E, and which can be screwed into a hole, w , of the cloth-plate t , to uncouple the looper B. The screw in this case will release the eccentric V from the shaft E, and hold it in a fixed position.

At figs. 13 and 14 an eccentric, V, secured upon the shaft E, operates a connecting-rod, U, the end of which is secured by means of a ball-joint, 8, to the shorter arm of a lever, Y, whose vertical shaft, 9, is mounted upon the frame Z of the machine. The toothed sector R, secured to the longer arm of the lever Y, operates a pinion, S, and the oscillating looper above described.

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

1. The combination, with the revolving looper, constructed as described, of an auxiliary looper, under the arrangement described, whereby a Willcox and Gibbs machine, without changing its functions as a single-thread machine, may be used as a double-thread machine, substantially in the manner and for the purposes described.

2. Operating the reciprocal auxiliary looper, when combined with a rotary looper, constructed as above described, by means of a circular eccentric, substantially as and for the purposes set forth.

3. The combination of the driving-mechanism of the reciprocal looper with the driving-mechanism of the rotary looper, by means of a reciprocating lever, receiving its movement by means of an oblique pin on the connecting-rod of the eccentric of the main shaft.

4. In combination with the lever N, for driving the reciprocating looper, of the coupling and uncoupling device, substantially as and for the purposes described.

In testimony whereof, I have signed this specification in presence of two witnesses.

EMIL CORNELLY.

Witnesses:

A. POLLOK,

GEO. S. HARWOOD.