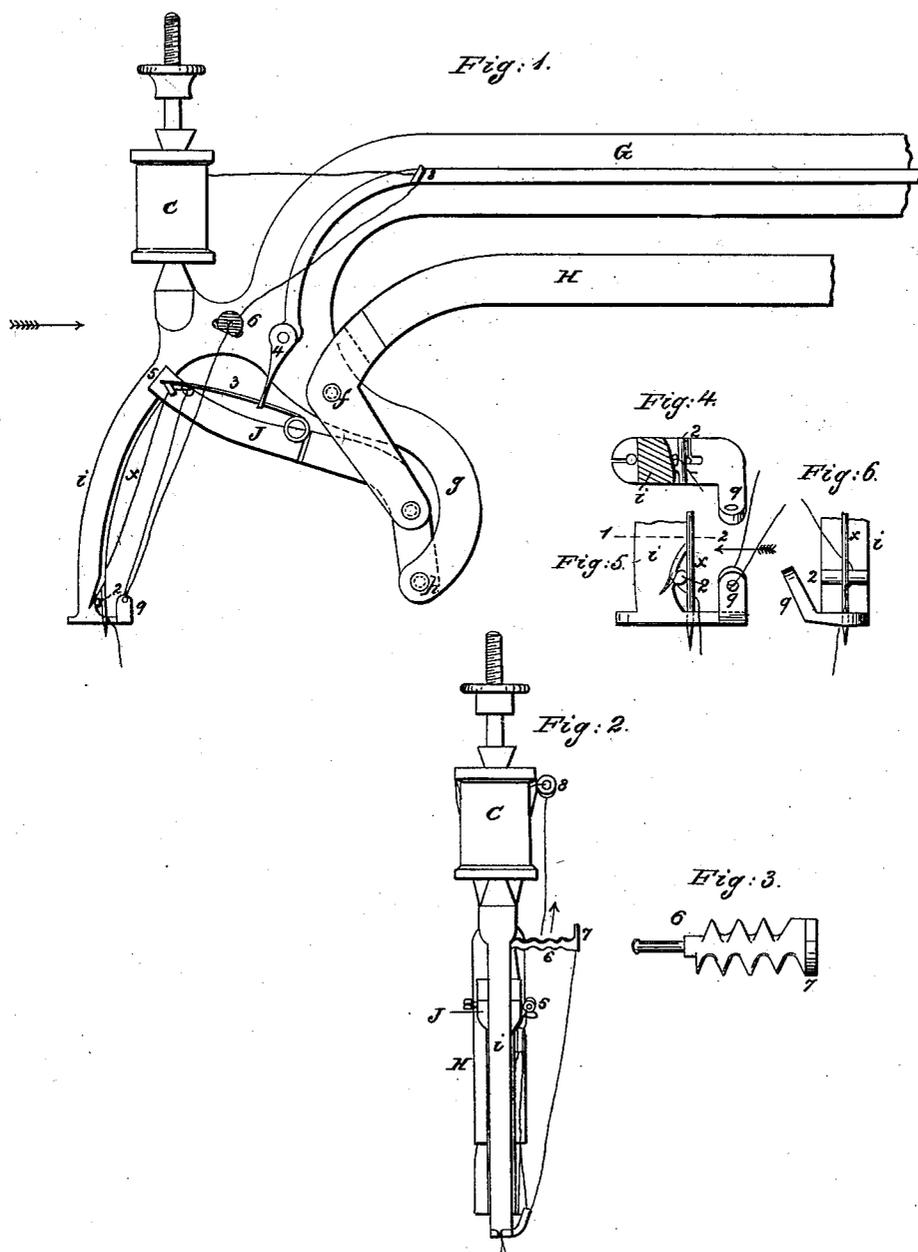


S. COMFORT.
Sewing Machine.

No. 22,050.

Patented Nov. 9, 1858.



UNITED STATES PATENT OFFICE.

SAMUEL COMFORT, JR., OF MORRISVILLE, ASSIGNOR TO HIMSELF AND FRANCIS H. JACKSON, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. 22,050, dated November 9, 1858.

To all whom it may concern:

Be it known that I, SAMUEL COMFORT, JR., of Morrisville, in the county of Bucks 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 and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

My invention relates to improvements on the improvements in sewing-machines for which Letters Patent of the United States were granted to me on the 29th day of June, A. D. 1858; and my present improvements consist, first, in protecting the bent needle and preventing it from springing or breaking, as it is in the act of penetrating the fabric, by means of a guard arranged to coincide with and be in juxtaposition to the needle; secondly, in a device connected with the needle-guard whereby the needle-thread is caused to maintain the needle in proximity to the guard, and whereby the thread is caused to take its place in the groove in front of the needle, and thus prevent a double loop from being passed around the shuttle.

In order to enable others skilled in the art to make and use my aforesaid improvements, I will now proceed to describe their construction and operation.

On reference to the accompanying drawings, which form a part of this specification, Figure 1 is a side view of sufficient of the rocking frame described in my patent of June 29, 1858, to show my present improvements; Fig. 2, an end view, looking in the direction of the arrow, Fig. 1; Fig. 3, an enlarged view of the device for increasing or diminishing the tension of the needle-thread; Figs. 4, 5, and 6, enlarged views of the lower end of the needle-guard and thread-guide, which form parts of the rocking frame, Fig. 5 being a portion of the view shown in Fig. 1; Fig. 4, a sectional plan on the line 1 2, Fig. 5; and Fig. 6, an inside view of Fig. 5, looking in the direction of the arrow.

Similar letters refer to similar parts throughout the several views.

G is a portion of the rocking frame illustrated and described in my patent of June 29,

1858, and H a portion of the needle-lever, both frame and lever being operated by devices precisely similar to those described in that patent.

J is the needle-arm, hung to a pin, *h*, on the end of the projection *g*, which is a part of the rocking frame. To a pin, *f*, on the same projection is hung the needle-lever H, the short arm of which is jointed to the needle-arm J. The forked end of the latter is fitted accurately to, but so as to slide freely on, the guard *i*, which also forms a part of the rocking frame G. The inside of this guard *i* represents the segment of a circle of which the pin *h* on the projection *g* is the center. The needle *x*, attached to the end of the arm J, is bent so as to coincide, or thereabout, with the inside of the guards, in close proximity with which the needle operates. The lower end of the guard *i* is hollowed out on the inside, and in the hollow is a projection, 2, which touches or nearly touches the needle, the projection forming a pin, round which the needle-thread may be passed and retained a short distance in front of the needle, as best observed in the detached views, Figs. 4, 5, and 6, for a purpose which will be apparent hereinafter. A spring-arm, 3, with an eye at the end for the passage of the needle, is secured to the arm J, and to the rocking frame G is attached a stop, 4, with which the spring-arm 3 comes in contact prior to the arrival of the needle at its highest position, a stop, 5, near the end of the needle-arm, serving as a limit to the downward movement of the spring-arm.

The apparatus for regulating the amount of tension of the needle-thread consists of a plate, 6, (see Fig. 3,) arranged to project from and turn in the side of the rocking frame G. This plate has a series of angular projections and recesses on each side, the projections on one side being opposite to the recesses on the opposite side. The extreme end of the plate has a flange, 7, standing at right angles, or thereabout, to the body of the plate, and in this flange is an eye for the needle-thread. This thread passes from the spool *c* through an eye, 8, on the rocking frame, thence to the plate 6, round which it is lapped with one or more folds, which rest in the angular recesses, thence through the eye in the flange 7 of the plate,

downward through an eye in the projection 9 on the end of the guard *i*, upward through the eye of the spring-arm 3, thence through the eye 5 on the needle-arm J, downward to the projection 2 at the bottom of the guard *i*, round which it is looped, and finally passes through the eye of the needle to the fabric.

The motion of the rocking frame G and needle-lever H, the method of obtaining the same, the combined action of the needle and stationary disk-shuttle for forming the stitch are precisely similar to those described in my Patent of June 29, 1858. In that patent, however, the fulcrum of the needle-arm J is situated between the needle and the point where the said arm is connected to the needle-lever. This arrangement involved the necessity of making the needle-arm inconveniently short, and of forming the needle with so sharp a bend as to render it weak. By my present arrangement the needle-arm is lengthened, and the needle consequently formed with a less abrupt bend. In my former plan, too, the shortness of the needle-arm required the adoption of a discoidal shuttle of inconveniently limited dimensions—an evil remedied by the above-described arrangement, in which the needle moves in the segment of a circle of which the lengthened needle-arm is the radius, demands a discoidal shuttle, forming a section of a larger sphere than in my former patent, and is consequently enlarged in diameter and will hold a larger amount of thread.

The spring-arm 3 serves the purpose of maintaining the needle-thread tight as the needle descends and before the needle has penetrated the fabric to the extent of the eye, thus insuring a uniform tightness of the stitch and a regular seam. Before the needle arrives at its highest position the arm 3 strikes the stop 4 and is retained by the latter until the needle-arm reaches its highest point. The tension of the thread is therefore momentarily released from the eye of the spring-arm, and the tightening of the stitch accomplished solely by the needle-arm.

By placing the bent needle in juxtaposition with the guard *i*, it is evident that any tendency which it may have to spring or break on penetrating the fabric is obviated. In fact, such a stay does this guard *i* afford to the curved needle that a thicker and tougher fabric can be more easily penetrated and with less liability to a detrimental effect on the needle than if the latter were made straight, as in other sewing-machines.

It is desirable that the bent needle should always be maintained as near to the inside of the guard as possible during its movement. This desideratum is attained by lapping the needle-thread round the projection 2 in the hollow at the lower end of the guard before it passes through the eye of the needle, the tension of the thread and the peculiar position of the projection 2 having a tendency to draw the needle outward and cause it to bear against the inside of the guard. The projection 2 also serves the purpose of guiding the thread in the groove at the back of the needle, and thus prevents both threads from passing round the shuttle.

I claim and desire to secure by Letters Patent—

1. The guard *i*, in combination with a bent needle, the inner edge of the said guard being in juxtaposition with the needle and forming the segment of a circle of which the center of vibration of the needle-arm is the center, for the purpose specified.

2. Causing the needle-thread to maintain the needle in proximity to the guard *i*, and at the same time so guiding the thread as to coincide with the groove of the needle, by means of the projection 2, arranged on the said guard, substantially as set forth.

In testimony whereof I have signed my name to this specification before two subscribing witnesses.

SAML. COMFORT, JR.

Witnesses:

HENRY HOWSON,
HENRY ODIORNE.