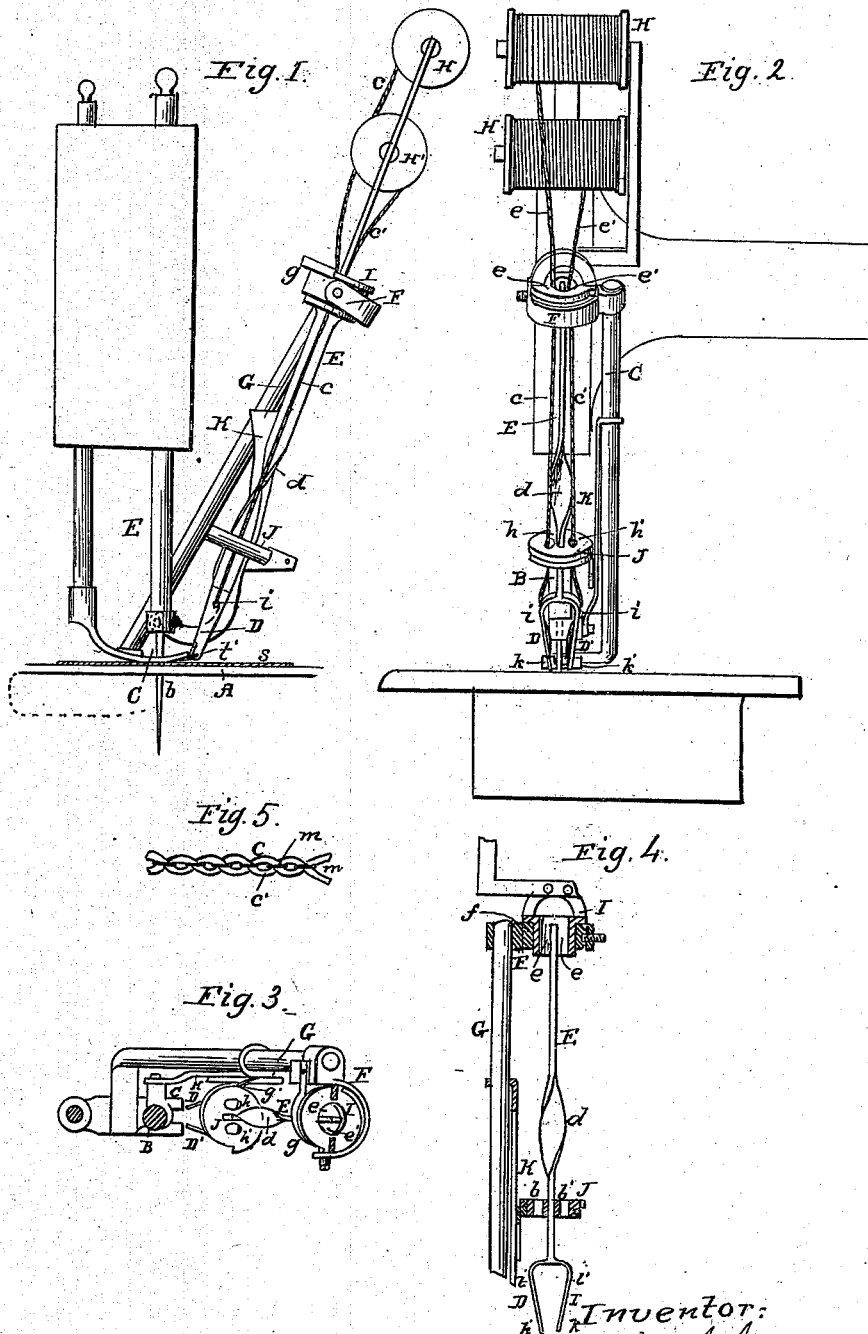


A. W. JOHNSON.
Sewing-Machine Attachment.

No. 112,601.

Patented March 14, 1871.



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UNITED STATES PATENT OFFICE.

ALBERT W. JOHNSON, OF MIDDLETOWN, CONNECTICUT, ASSIGNOR TO HIMSELF, RUFUS BAKER, AND OSCAR D. LEE, OF SAME PLACE.

IMPROVEMENT IN EMBROIDERING ATTACHMENTS FOR SEWING-MACHINES.

Specification forming part of Letters Patent No. **112,601**, dated March 14, 1871.

To whom it may concern:

Be it known that I, ALBERT W. JOHNSON, of Middletown, in the county of Middlesex and State of Connecticut, have invented a new and Improved Embroidering Attachment for 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 drawing, forming part of this specification.

This invention has for its object the carrying of one or more threads in opposite directions, alternately, across the line of sewing, and so depositing such thread or threads upon the face of the material to be embroidered that such thread or threads shall be secured to the material by the sewing or stitching thread or threads; and the invention consists in a certain combination of devices for giving to the thread carrier or carriers an intermittent revolution, to effect the carrying or laying of the embroidering thread or threads, as hereinbefore described, the same including a combination, with the thread carrier or carriers, of a twisted shank or spindle and fast and loose ratchets, with pawls to match, operated by a connection with the needle or needle-bar.

The invention also comprises an inclined stationary guide and vibrating and sliding connection, arranged in relation to the revolving thread carrier or carriers, and combined therewith, so that they produce a movement of said carrier or carriers toward and from the needle or sewing device of the machine, to adjust and spread the loop formed by the embroidering thread or threads for the needle to pass through, and afterward to tighten the loop.

Said invention is applicable to various kinds of sewing-machines, working either a single or double thread, and employing different kinds of sewing or stitching devices; but it will here be shown and described in connection with a shuttle-machine, and under a construction or combination of parts for using two embroidering-threads.

Having thus specified the object and nature of the invention, its description will be proceeded with in reference to the accompanying drawing.

Figure 1 represents a front view of a sewing-

machine, in part, with the improved embroidering attachment applied thereto; Fig. 2, a side view of the same; and Figs. 3 and 4, horizontal and vertical sectional views, mainly, of said attachment. Fig. 5 is a view, on an enlarged scale, of the embroidering-threads as laid by the attachment, and as secured by a line of stitching.

A represents the cloth bed or table of a sewing-machine; B, the needle-bar, carrying a needle, *b*, for operation in connection with a shuttle beneath; and C, the presser-foot of the machine, bearing on the material, *s*, to be embroidered.

The embroidering thread or threads *c c'* are laid by a process of twisting as effected by the action of a revolving thread carrier or carriers. D D' represent two of such carriers, arranged to revolve around a common axis by attachment to the lower end of a common spindle or shank, E, which is shown to occupy an upwardly-inclined position relatively to the table, and away from the toe end, as it were, of the presser-foot. Said spindle is twisted for a portion of its length, to constitute a spiral, *d*, the twist of which is equal to half of a revolution, or thereabout, and its upper end made hollow, with eyes *e e'* through it, for the embroidering-threads *c c'* to pass through.

The twisted portion of said spindle is of flattened or angular construction, but the upper or eye end of it of circular form, and arranged to turn in a box or bearing, F, or bush *f* fitted therein. This box or bearing F is fast to an inclined stationary guide, G, carried by the presser-foot C.

I is a fast ratchet on the spindle E, and J a loose or secondary ratchet, arranged so as to be capable of sliding up and down the twisted portion of said spindle. These ratchets are provided with two oppositely-arranged teeth, with which pawls *g g'* are made to gear. The one *g* of these pawls is carried by the fixed bearing F or inclined stationary guide G, and meshes with the ratchet I, while the other pawl, *g'*, is carried by a sliding connection, K, which is made fast at its lower end to the needle or needle-bar, and is fitted above to slide up and down the inclined stationary guide G. This sliding connection K also carries the lower ratchet, J.

The operation of these ratchets I and J is

such that in the upstroke of the needle-bar B the ratchet I serves, by the aid of its pawl, to hold the spindle E from turning, the ratchet J being free to rotate as it is carried upward over the spiral portion *d* by the sliding connection K.

In the downstroke of the needle-bar the action of these ratchets is reversed—that is to say, the ratchet J is restrained by its pawl from rotating, and consequently operates to rotate the spindle E by its spiral *d*, and the thread-carriers D D', connected therewith, half of a revolution, the ratchet I during such movement not being held by its pawl. In this way the thread-carriers D D' are made to move intermittently half of a revolution at a time, but always in the same direction, such movement taking place during the downstroke of the needle. By means of the sliding connection K and inclined stationary guide G, said thread-carriers have also a forward and backward movement relatively to the needle, being moved toward the needle in its upstroke and away from said needle in its downstroke. The object of this movement will be hereinafter explained.

The embroidering-threads *c c'* may be supplied by any suitable devices, arranged horizontally or otherwise; but it is preferred to use upwardly-arranged horizontal spools H H', and to connect the same, as shown, with the spindle E, so as to rotate in common with it and the thread-carriers to secure the proper run and supply of the threads to the carriers D D', which draw from the spools in their downstroke. Said threads *c c'* are passed from their respective spools H H', the one *c* down through the eye *e* in the upper end of the spindle E, from thence down the same side of the spindle, through an eye, *h*, in the ratchet J, and to and through an upper eye, *i*, in the carrier D, down the inside of the latter, and finally out through a lower eye, *k*, in said carrier, while the other thread, *c'*, is similarly passed from its spool through correspondingly-arranged eyes *e'*, *h'*, *i'*, and *k'* on the opposite side of the spindle and in the other carrier, D'. The termini of said threads are then crossed and passed under the presser-foot, crossing, as it were, when the feed is a straight

one, or in line with the presser-foot, the line of the stitches made by the sewing or stitching devices.

The operation is as follows: During the ascent of the needle-bar the thread-carriers D D' lie on opposite sides of the line of stitches; but as the needle descends the thread-carriers D D' are turned half a revolution, causing the threads *c c'* to be twisted, the one around the other. The forward movement of the thread-carriers D D' relatively to the needle, which takes place during each upstroke of the needle, brings and spreads the loop previously formed by the twisting of the threads *c c'* under the needle, and so as to receive the latter when descending freely through said loop without puncturing the threads. During the descent of the needle a fresh twist of the embroidering-threads takes place and the previous loop is drawn tight by the back movement of the thread-carriers D D' relatively to the needle as produced by the sliding connection K and inclined stationary guide G. Thus the embroidering-threads *c c'* are not only twisted about each other, but so laid upon the material to be embroidered that each of said threads crosses the line of sewing or stitching in opposite directions alternately, and are secured by the sewing or stitching thread or threads *m*, as shown in Fig. 5 of the drawing.

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

1. The combination, with the thread carrier or carriers, of the twisted shank or spindle and the fast and loose ratchets and their pawls, operated by a connection with the needle or needle-bar, substantially as herein described, to produce the intermittent revolution of the carrier or carriers.

2. The inclined stationary guide and vibrating and sliding connection, in combination with the revolving thread carrier or carriers, substantially as herein described, for producing a movement of the said carrier or carriers toward and from the needle, as and for the purpose herein set forth.

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Witnesses:

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