

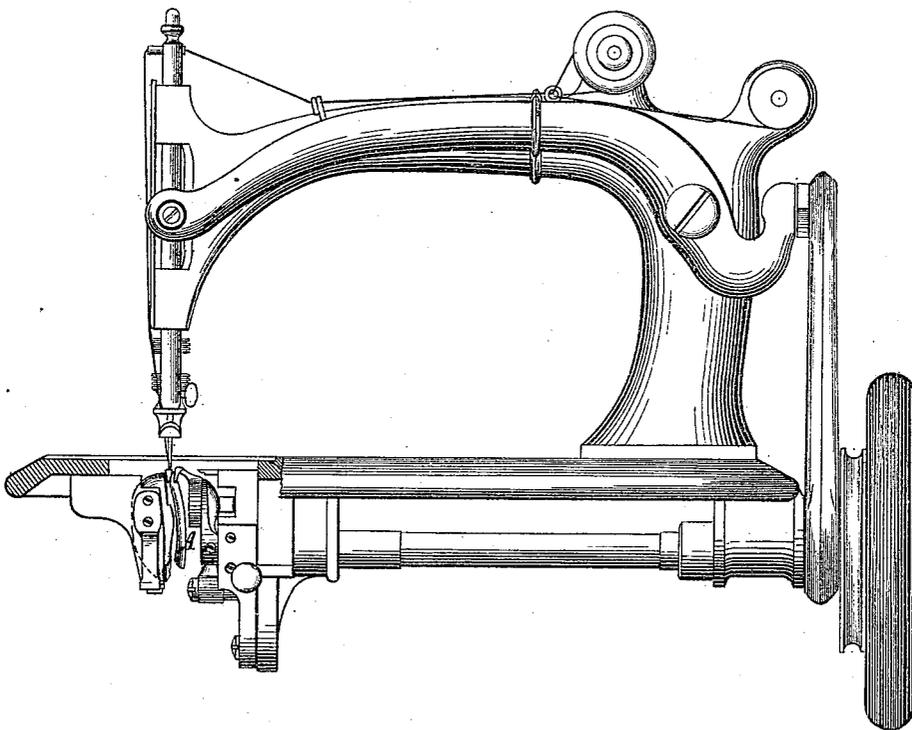
C. W. HOWARD.

Improvement in Sewing-Machine.

No. 126,056.

Patented April 23, 1872.

Fig. 1



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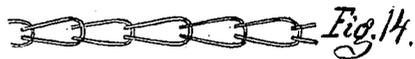
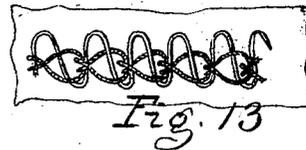
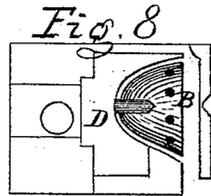
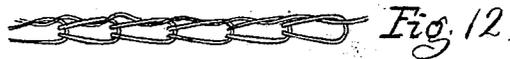
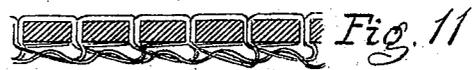
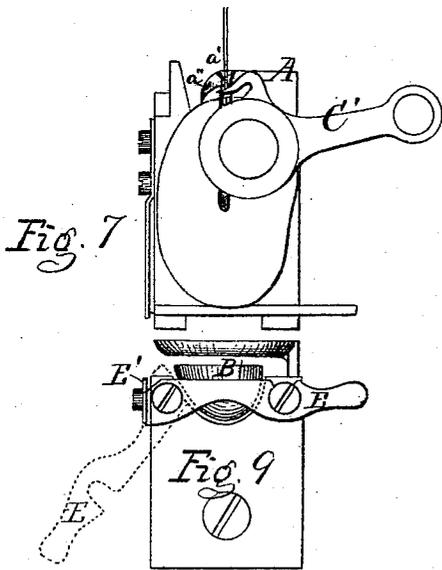
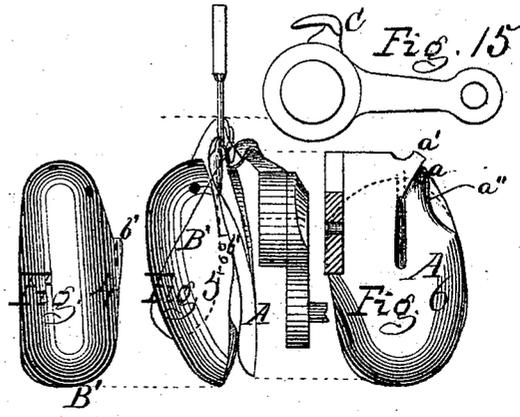
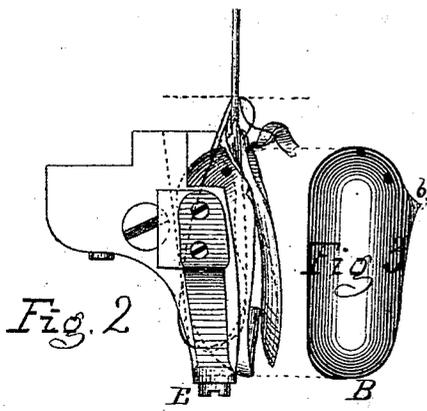
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UNITED STATES PATENT OFFICE.

CHARLES W. HOWARD, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. 126,056, dated April 23, 1872.

Specification of an Improvement in Sewing-Machines, invented by CHARLES W. HOWARD, of the city and county of Philadelphia and State of Pennsylvania.

This improvement is especially applicable to the machine commonly known in the trade as the "Philadelphia sewing-machine," which is manufactured by the "Philadelphia Sewing-Machine Company" under the patents of Meade. The improvements are, however, readily adaptable to other forms of rotary or reciprocating hook machines, and such improvements are, therefore, not intended to be limited by the claims of my patent to their use in any particular form of machines.

The features by which my invention may be distinguished from all corresponding parts of machines heretofore known or constructed are the following: First, I employ a shield with stationary guides, one of which is intended to hold the thread in position while the stitch is being formed, so that the needle shall descend either through the loop or behind it, as may be desired, and will be determined by the form of bobbin-case that may be used in combination therewith. Second, I employ in combination with the shield, a bobbin-case having upon its edge a point projecting in such manner as to determine the position of the thread-loop on the shield; and, by having the machine supplied with bobbin-cases having the point or projection on each differently situated—as will be hereinafter explained—the stitch may be changed by having the needle strike through the loop in one case and behind it in another. Third, I construct the hook in a form different from any heretofore known, for reasons to be hereinafter explained. Fourth, I have introduced a new combination of parts for conveniently attaching, retaining, and detaching the bobbin-case.

Figure 1 is an elevation partly in section. Fig. 2 is an elevation, showing the bobbin-case holder, shield, and bobbin-case inserted; also showing the loop passing around the bobbin-case. Fig. 3 is an elevation of a bobbin-case having a point or projection, intended to form a combined chain-and-shuttle stitch, the needle passing through the loop in the thread passing around the bobbin-case, as illustrated in Fig. 2. Fig. 4 is an elevation of another form of bobbin-case, having the point or projection ar-

ranged in such position as to form a new stitch, illustrated in Fig. 10, by passing the needle behind the loop. Fig. 5 is an elevation, showing the form of bobbin-case shown in Fig. 4, in combination with the shield. (Fig. 2 shows the bobbin-case, Fig. 3, in the same combination.) Fig. 6 is an elevation of the shield, showing the two guides, the inner face being presented. Fig. 7 is an elevation, showing the hook and shield and guides. Fig. 8 is a plan view of the bobbin-case in position. Fig. 9 is a plan of the latch and bobbin-case held by it. Fig. 10 is a section, showing a novel stitch, which I call a compound chain-stitch, made by the bobbin-case, Figs. 4 and 5. Fig. 11 is a section, showing a combination of a shuttle-and-chain stitch, made by using bobbin-case, Figs. 2 and 3, with thread on the bobbin. Fig. 12 is a view of the same stitch seen from above. Fig. 13 is what is known as the stitch covered by Johnson's patent, dated January 24, A. D. 1860, No. 26,906. Fig. 14 is a view of a simple chain-stitch, made by taking the thread out of the bobbin-case, Fig. 3, and using only the upper thread. Fig. 15 is an elevation, showing the form of hook in common use.

The same letters of reference are employed in all the figures in the designation of identical parts.

The mode of operating the needle-hook and feed mechanism being old and well known to persons skilled in the art need not be herein described.

In the original machines a shield was used having a throat to receive the needle and a recess or depression, along which the hook passed for the purpose of catching through the loop formed in the thread (when the needle begins to be raised) by the relaxation of said thread.

The first part of my invention consists in cutting a groove, shown at *a''*, Figs. 6 and 7, in the upper part of the shield, extending across the outer face, as shown in Fig. 7, and down the inner face, as shown in Fig. 6, thereby forming two projections, shown at *a* and *a'* in Figs. 6 and 7, which I call the guides, as they control the position of the loop when passed around the bobbin-case, as shown in Figs. 2 and 5, the position being determined by the form of bobbin-case, to be described. The bobbin-case B or B' contains the lower thread, and is fastened in the machine in the

relation to the shield, indicated by the drawing, so that the loop may be thrown around the bobbin-case by the hook. The bobbin-case has upon its edge a point or projection, as shown at *b* or *b'*, the position of the point controlling the position of the thread forming the loop, as in case the point is located as at *b*, Fig. 3, the thread which passes over the shield to form the loop will have one of its ends carried over the guide *a'*, on top of the shield, while the other end of the loop will pass over the lower guide *a* into the groove *a''*. The effect of this disposition of the thread will be that the loop will be so opened that the needle in descending will pass through the loop, and the hook catching the thread from the needle as it begins to rise—below the loop passed around the bobbin—will draw the second loop through the first one, forming a single chain-stitch if there is no thread in the bobbin; and if there should be a thread from the bobbin it will be surrounded by the loop, and a stitch formed which will be a combined shuttle-and-chain stitch, as shown in Figs. 11 and 12. It is manifest that the bobbin-thread will prevent the chain-stitch formed by the upper thread from unraveling; but, by drawing out the bobbin-thread, the stitch may then be readily unraveled.

In case the lip or projection on the bobbin-case is placed as at *b'* in Fig. 4, then both the ends of the loop will fall into the groove *a''* between the two guides *a a'*, and the thread at the end of the loop being thus confined the needle in descending will pass behind the loop, and the hook catching the second loop formed by the upward motion of the needle will draw the first loop that is around the bobbin-case up, and in doing so draw the thread from the bobbin in a loop around the second loop, thus forming a compound chain-stitch, as shown in Fig. 10.

Instead of a single shield with guides, as shown, and a series of bobbin-cases having lips *b b'* variously disposed for changing the stitch, it is evident that the same effect may be reached by having two shields having guides differently arranged, and a single bobbin-case with a lip, *b'*.

A hook of the ordinary construction is shown in Fig. 15. All such hooks have the point of the hook arranged to catch the loop at a point as high or higher than the heel of the hook. In the hook shown in Fig. 7 the point of the hook is depressed so as to pass below the guide *a*, and thereby avoid the danger of catching the loop that is around the bobbin-case and breaking it.

To secure the bobbin-case in its holder I place a pin, *D*, projecting from the bobbin-case holder, so as to bear against the bobbin-case and determine its elevation. When the bobbin-case has been pressed upward against the pin *D* a hinged thumb-latch, *E*, is swung under it, thereby holding it firmly in place. A spring, *E'*, holds the thumb-latch in position, when either open or closed, by bearing against its square faces.

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

1. The combination, with a hook substantially as described, of a stationary shield, *A*, constructed with guides *a a'*, substantially as set forth.

2. In combination with such a shield, a bobbin-case constructed with a lip or projection, *b* or *b'*, for regulating the position of the thread forming the loop, substantially in the manner set forth.

3. In combination with a shield constructed with stationary guides, a hook, *C'*, having its point depressed so as to catch the loop formed by the ascent of the needle below the loop passed around the bobbin-case, substantially in the manner set forth.

4. In combination with a bobbin-case, a thumb-latch, *E*, supporting the case below, and a fixed point for determining the position of the case in its holder so that it may be introduced at the bottom of the bobbin-case holder, substantially as set forth.

CHARLES W. HOWARD.

Witnesses:

C. CHABOT,
W. H. BLAKE.