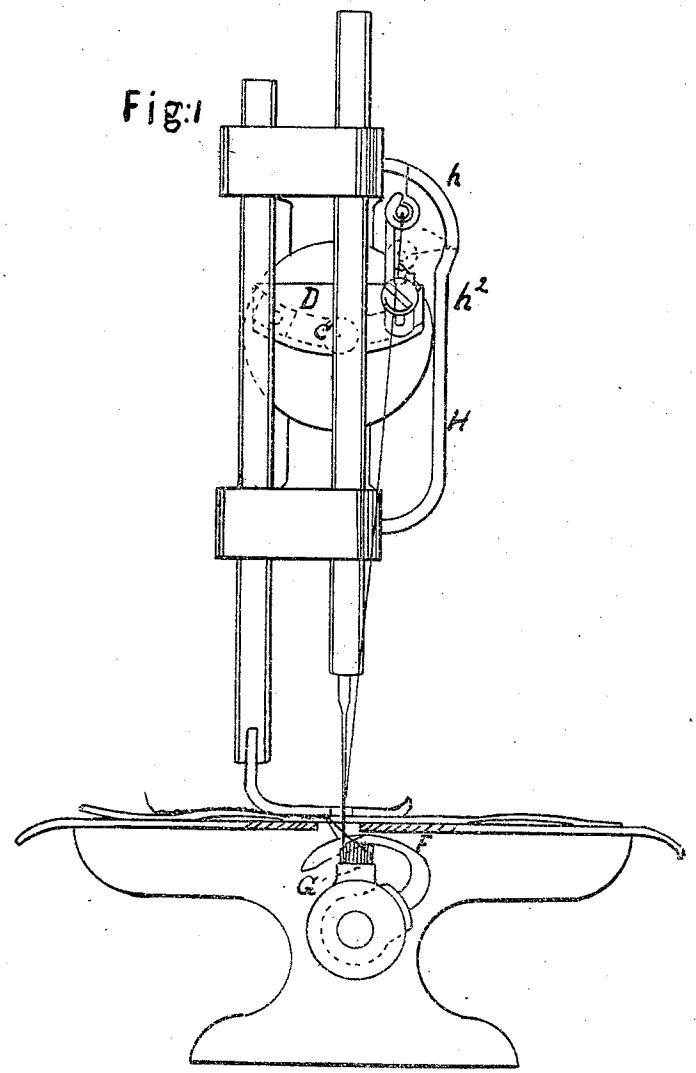
E. H. Smith.

Sewing Mach.

No. 96160. Patented Oct. 26. 1869

Fig: 1

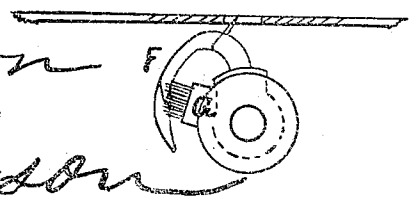


Witnesses:

H. B. Brown

Wm. H. Johnson

Fig: 2.



Inventor:

E. H. Smith

United States Patent Office.

EARLE HARRY SMITH, OF BERGEN, NEW JERSEY.

Letters Patent No. 96,160, *dated October* 26, 1869; *antedated October* 13, 1869.

IMPROVEMENT IN SEWING-MACHINE.

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, EARLE HARRY SMITH, of Bergen, Hudson county, State of New Jersey, have invented certain Improvements in Sewing-Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing, which forms part of this specification.

My said invention relates to that class of sewing-machines which make the chain-stitch with a single thread, by means of a looper and an eye-pointed needle, acting together, from opposite sides of the cloth; and the invention may be said to consist of a combination of three elements.

First, a looper or hook, which, when advancing, enters and strains the loop forward and downward, and when retreating, opens or spreads such loop for the entrance of the descending needle.

Second, a "returner," moving with such looper, to return the loop after having thus been strained forward, and carry it back under the point of the descending needle.

Third, a "take-up," to hold up the needle-thread till the eye of the needle enters the cloth, and not relax the thread while any part of the needle is in the cloth.

The above three features operating conjointly together.

To enable others skilled in the art to make and use my invention, I will proceed to describe the same.

Figure 1 is a front elevation, and

Figure 2 is a separate view of the looper.

The machine has the usual needle-bar, feeding-device, presser-foot, cloth-plate, &c., which may be of any chosen form.

The needle A is operated by a crank-pin fixed in a revolving disk, B, on the driving-shaft C, which pin runs in a curved groove, cut in a block, D, made fast to the needle-bar E, by which a differential motion is imparted to the needle, being slower when in the cloth than when out of the cloth.

The looper F is set on a rock-shaft beneath the cloth-plate, and therefore has a curvilinear reciprocating motion. The rock-shaft derives its motion from the revolving driving-shaft C, in any manner in common use.

The looper has a thin beak, a broad head, and a short neck, and possesses these characteristics:

First, a capacity to enter the look, advancing, and

Second, to draw or strain said loop forward and downward, that is, from the fabric being sewed.

Third, a capacity, while retreating, to spread the loop for the entrance of the descending needle.

G is a device which I term a "returner," its object being to return the loop, and deflect the same backward under the needle, as the latter descends through the fabric in commencing the next stitch. Said returner is represented as composed of a brush (but other means may be used,) made of very soft material, such as camel's hair. It may be of bristles, or a spring of metal, or any other substance that will not offer any considerable resistance to the passage of the thread along the looper as the latter enters the loop.

The needle-thread is led from the rear of the machine to an eye fixed to the needle-bar, passing outside of, and over a fixed cam take-up, formed by the wire H, the same presenting a curved surface, h^1, and straight surface, h^2, the former of which surfaces takes up the slack, as the needle descends, between the eye thereof and the cloth, by the thread becoming momentarily lodged thereon, slipping off gently as the eye enters the cloth, and the latter of which surfaces, h^2, maintains the thread under tension, when the needle is in the cloth, descending, which said maintenance of the thread materially assists in closing up the look, so as to remove it out of the way of the point of the looper as it advances to take the new loop or bow of thread from the needle. Motion is communicated to the looper in any ordinary manner.

The operation of the machine is as follows:

Supposing the needle to be in the act of rising, the looper having entered the loop, said loop slips over the head thereof, and also past the returner G. The looper continues to advance until the loop is drawn upon and strained by the neck of the looper, as shown in fig. 2. At this time the needle-thread above is raised above the curved surface h^1 of the cam take-up H. When the looper begins to retreat, the needle commences to descend, and in so doing, the needle-thread is drawn over the curved surface h^1, causing the slack to be taken up (as fast as it would otherwise form below the point of the needle) until the needle's eye reaches the cloth, and at that juncture the thread begins to slip off the said curved surface h^1. As the point of the needle protrudes through the cloth, the loop around the looper is presented for the entrance of the point of the needle, by means of the returner G, which carries the loop backward, as the looper retreats, until such loop assumes the position shown in fig. 1. As the needle now descends through this loop, thus presented, the needle-thread is not relaxed above, but slides down (in unison with the needle-bar) over the surface h^2, during which the loop aforesaid is closed up toward the cloth. The needle now rises again, the looper again advances, and the above-recited operation is again repeated, and so on, in the forming of each stitch, as the sewing progresses.

Having thus described my invention,

What I claim therein as new, is—

The combination of the looper, the brush returner, or its equivalent, and the take-up, the whole operating together substantially as described.

EARLE HARRY SMITH.

Witnesses:

WM. H. JOHNSON,

ADDISON C. BROWN.