(No Model.) 4 Sheets—Sheet 1.

E. KOHLER.

SEWING MACHINE.

No. 489,163. Patented Jan. 3, 1893.

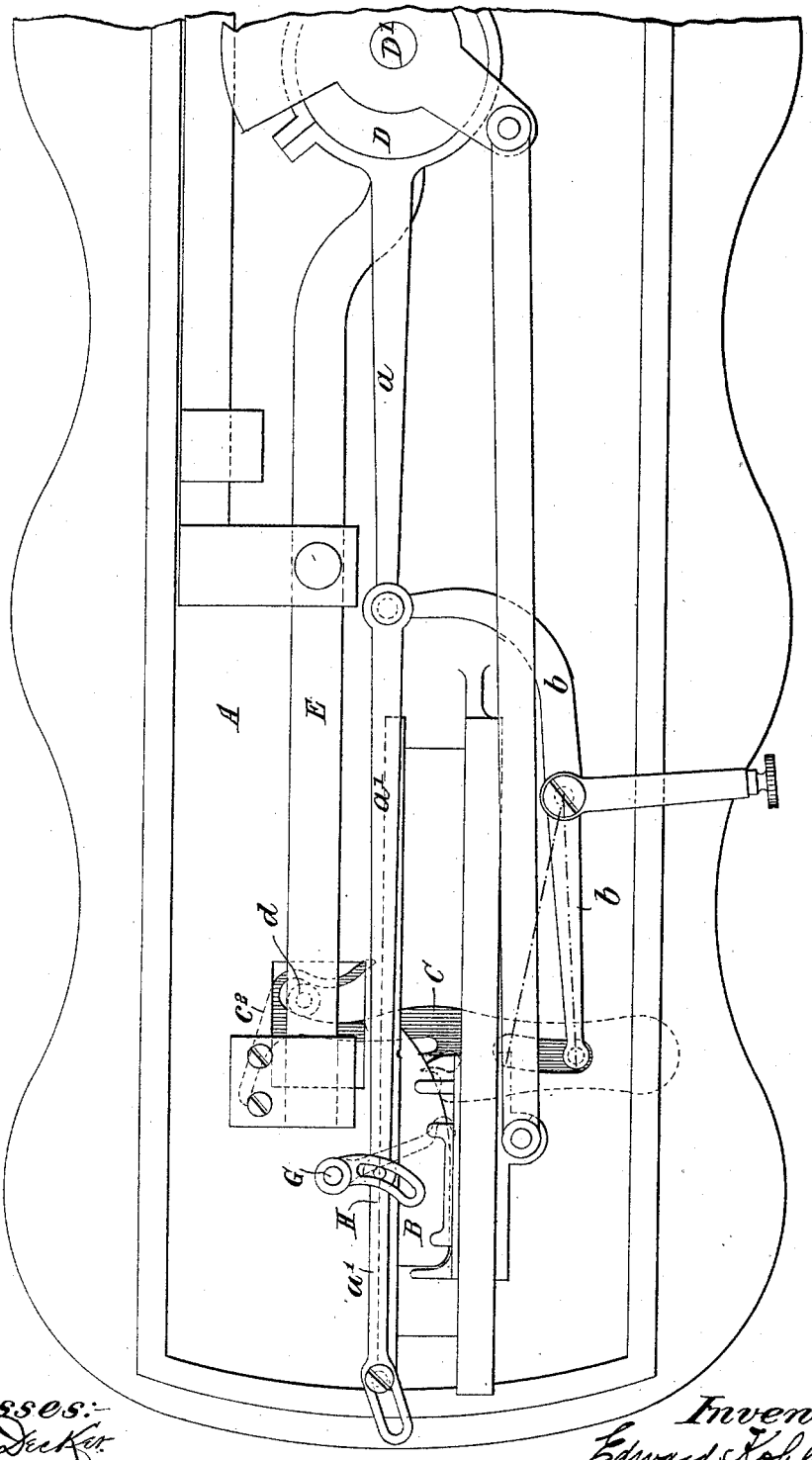

Fig. 1.

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D. H. Haynes

Inventor:
Edward Kohler
by attorneys
Brown & Seward

(No Model.) 4 Sheets—Sheet 2.

E. KOHLER.

SEWING MACHINE.

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Fig. 3.

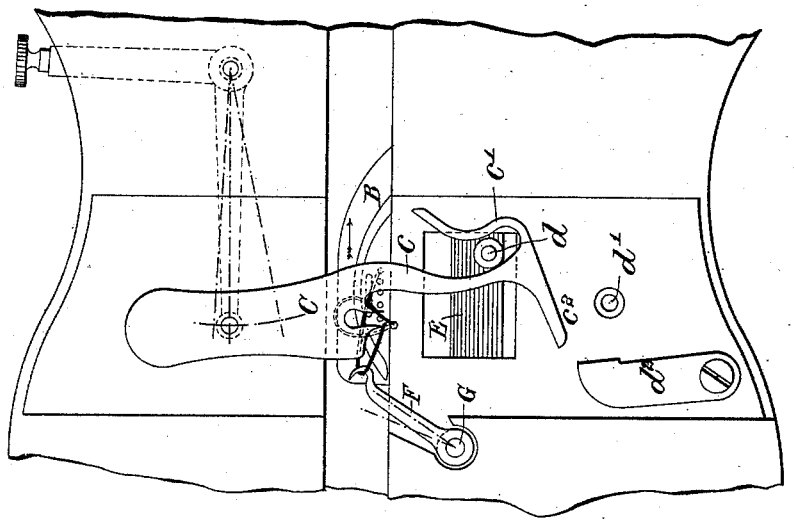
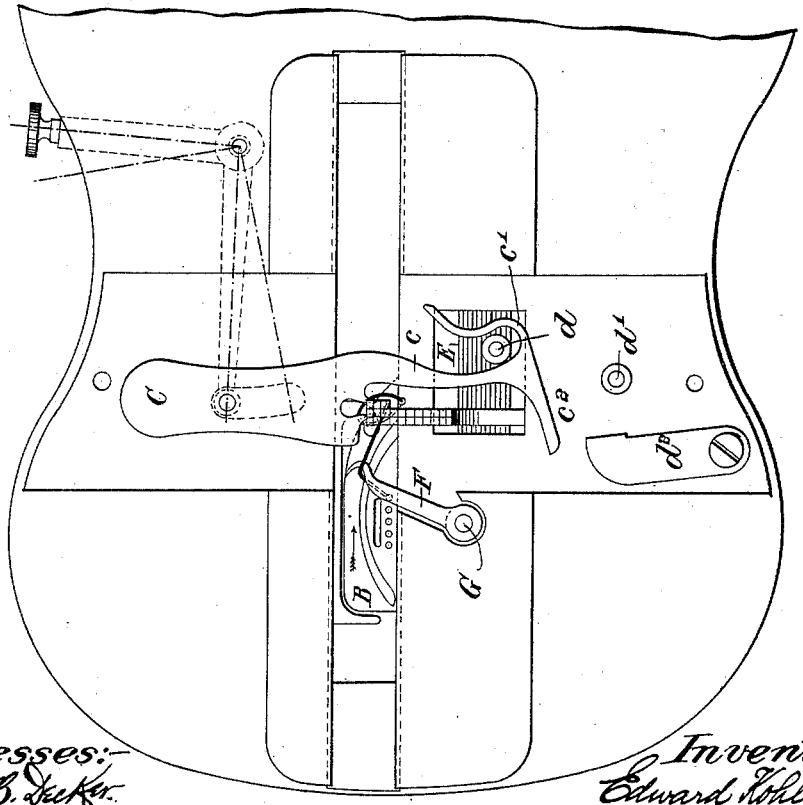


Fig. 2.



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(No Model.)

4 Sheets—Sheet 3.

E. KOHLER.

SEWING MACHINE.

No. 489,163. Patented Jan. 3, 1893.

Fig: 5.

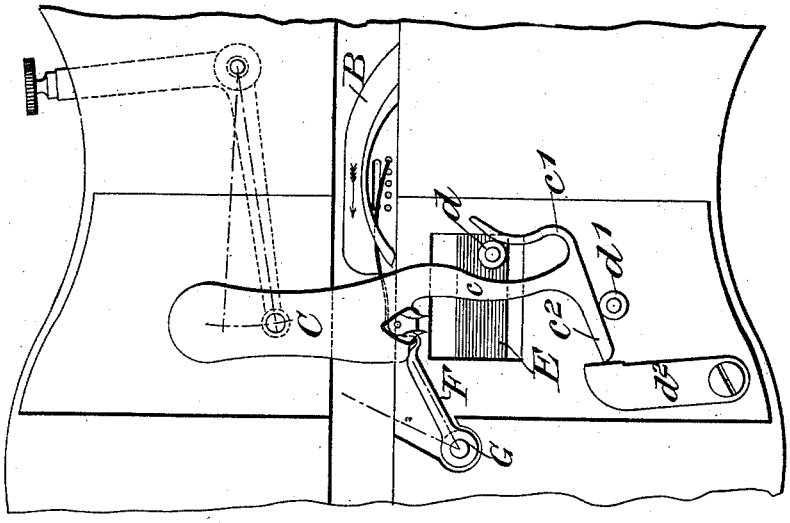
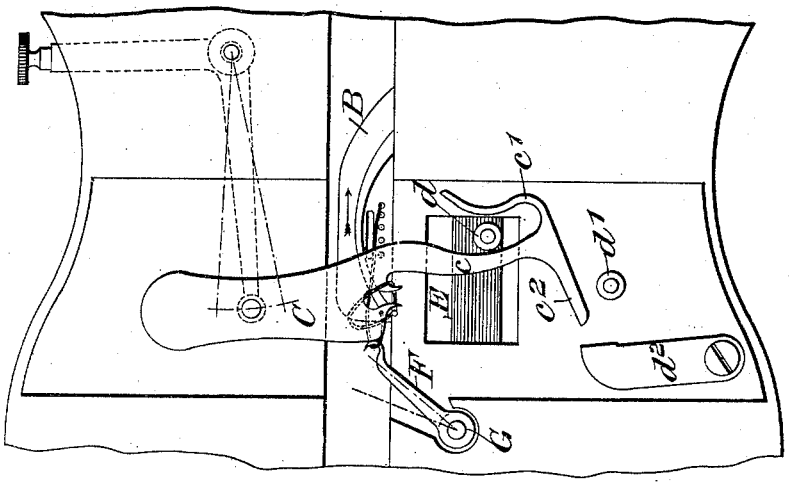


Fig: 4.



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(No Model.)

4 Sheets—Sheet 4.

E. KOHLER.

SEWING MACHINE.

No. 489,163. Patented Jan. 3, 1893.

FIG: 7.

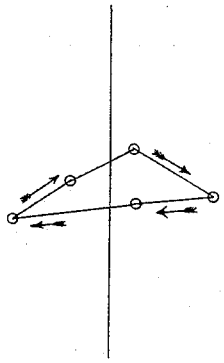
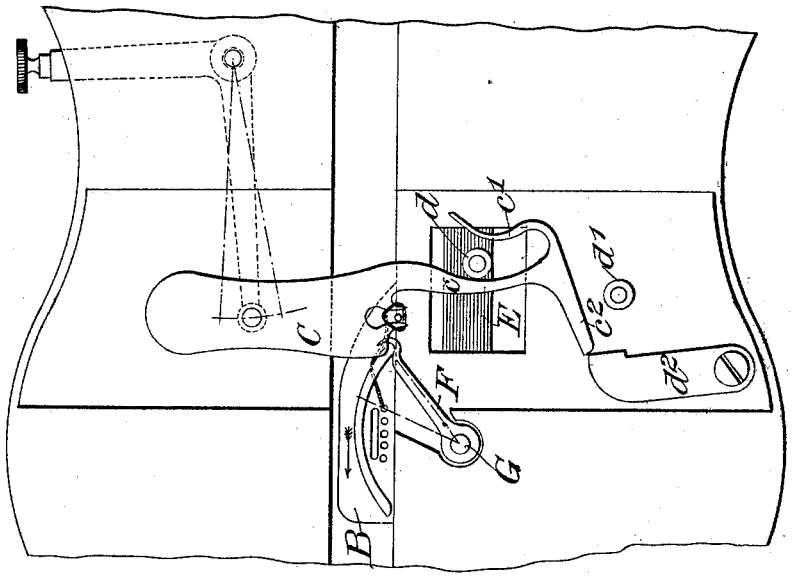


FIG: 6.



Witnesses:-
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V. C. Haynes

Inventor:-
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Brown & Seward

UNITED STATES PATENT OFFICE.

EDWARD KOHLER, OF LONDON, ENGLAND, ASSIGNOR TO MAURICE GRANT, OF SAME PLACE.

SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 489,163, dated January 3, 1893.

Application filed August 4, 1892. Serial No. 442,105. (No model.)

To all whom it may concern:

Be it known that I, EDWARD KOHLER, of 97 Cheapside, in the city of London, England, have invented certain new and useful Improvements in Lock and Chain Stitch Sewing-Machines, of which the following is a specification.

This invention relates to improvements in the sewing machine described in the specification of patent granted to Edward Kohler, and bearing date the 7th day of April 1891, No. 449,818.

In the accompanying drawings, Figure 1 is an underside plan view of a shuttle machine with the present invention adapted thereto. Figs. 2. 3. 4. 5, and 6, are plan views, with the covering plate removed, and showing the parts in five different positions during the making of a stitch.

In the specification of patent above referred to, a reciprocating forked loop holder is described, the office of which is to take the loop from the shuttle, and hold it open in the path of the needle at its next descent, whereby, in a lock-stitch sewing machine, a chain-stitch may also be produced, at will. The said loop holder received, in addition to the reciprocating motion, an oscillating motion, such motion being caused, in one direction, by a fixed cam piece, and in the opposite direction by a spring. In the same specification, the production of a third stitch, namely, an embroidery-stitch, or a lock-stitch and a chain-stitch combined, is mentioned. It has been found, in practice, that this embroidery stitch is somewhat irregular in appearance, the shuttle thread being sometimes on one side of the loop, and sometimes on the other.

Now, the objects of the present invention are to provide for the oscillation of the loop holder by direct means, and also to insure the regularity of the embroidery stitch.

In carrying out this invention, the forked loop holder is provided with a hooked extension, the hook of which takes onto a bowl carried by the feed-dog actuating mechanism, so that the loop holder is brought to one side of the needle, to enter the loop, and is then moved laterally to bring the loop into position to receive the needle at its next descent.

The means which are provided to insure the regularity of the stitch may consist of a hooked finger mounted on a vertical rocking axle, to which motion may be communicated in any convenient manner; for instance, by a pin on a reciprocating rod or bar, taking into a slotted curved arm keyed to the rocking axle, the said rod being connected with driving mechanism of the loop-holder by which it is reciprocated. The office of this hooked finger is to seize the shuttle thread as the shuttle advances, and hold it to one side of the loop, out of the path of the fork of the loop holder, when the latter advances and enters the loop of the needle thread, as it slips off the heel of the shuttle, when making the combined lock and chain, or embroidery, stitch.

The machine to which the invention is applied is what is known as the "German Singer" machine, with the shuttle working longitudinally of the table.

A is the table of the machine, and B is the shuttle, which is worked in the usual way.

C is the forked loop holder, which receives a longitudinal reciprocating motion transversely of the table, from the eccentric D on the vertical shaft D′, through the connecting rod *a*., and lever *b*, or in any other convenient manner. The forked loop holder is provided with an extension piece *c*, having at one side portion *c*′, and at the other side an inclined finger or horn c^2. In the hooked portion *c*′, works a bowl *d*, carried by the reciprocating bar E, which serves as the feed-bar driver. *d*′ is a second bowl, mounted on a stud pin secured to the table of the machine, and d^2 is an adjustable abutment piece, against which the nose of the horn c^2 strikes at certain times in the stroke.

F is a hook, which is mounted on the end of a vertical rock shaft G, carried in bearings in the table. On the lower end of this shaft G, is keyed a slotted arm H, in the slot of which works a pin on the prolongation *a*′ of (and pivoted to) the eccentric connecting rod *a*. As the part *a*′ advances and retires, the pin causes the shaft to rock, and thus oscillate the hook. This hook is arranged to oscillate above, and just clear of, the shuttle, but below the forked loop-holder, and its business is to act as a kind of take up, to take up the slack of the shuttle thread, as the

shuttle is advancing, and hold the shuttle thread tight, thus keeping it out of the way of the fork while the loopholder is entering the loop. In this way, the shuttle thread is always kept on one side of the loop, and an even stitch is the result.

In the position shown at Fig. 2, the shuttle has just entered the loop of the needle thread, the hook F has been rocked to seize the shuttle thread, so as to keep it tight while the shuttle advances, and the forked loop-holder C is commencing to advance on the left side of the needle.

Fig. 3 shows a further development; the shuttle is nearly through the loop; the hook F is following the movement of the shuttle, still keeping the shuttle thread tight; and the loop holder has advanced so that its right prong has passed under one side of the loop. The movement of the holder is in a diagonal direction from left to right, this movement being caused by the bowl *d*, which, it will be seen, has moved to the right with the feed bar driver E, which carries it and which may be operated by an eccentric on the shaft D′ or in any other known or convenient manner, the feed bar operating mechanism thus serving to produce the lateral oscillation of the loop-holder to the right.

In Fig. 4, the shuttle has passed through the loop, the hook F still following. The prongs of the looper have passed entirely to the right hand side of the needle, and both have entered the loop, the loop having been pushed to one side by the right prong. The take-up now begins to operate, and tightens the loop round the prongs of the loop-holder. At the same time, the looper is advanced until its arm or finger c^2 strikes against the bowl *d′*. (See Fig. 5). The continued forward motion of the loop-holder (by reason of the inclination of the finger c^2) causes it to move to the left, and the point of the finger c^3. strikes the fixed stop d^2. The fork will thus have brought the loop into position for the needle to pass through at its next descent. At the same time, the hook F will have rocked to its farthest limit, and will have freed itself from the shuttle thread, and the shuttle will have commenced its return stroke.

In Fig. 6, the shuttle has nearly completed its return stroke: the hook F is about to advance again, to seize the shuttle thread; the loop-holder is withdrawing from the loop; and the feed bar driver E is in its most forward position. The parts will of course be timed to work in proper order.

Fig. 7 is a diagram which shows the line of movement of the points of the prongs, of the fork.

I claim—

1. In a shuttle sewing machine adapted to produce either a lockstitch or a chain-stitch, or a combined lock and chain stitch, the combination with a vertical needle and a reciprocating shuttle, of a reciprocating and oscillating forked loop holder, a device for holding the shuttle thread during the formation of the combined stitch, and means for driving the several parts, all substantially as described.

2. In a shuttle sewing machine adapted to produce three kinds of stitches, the combination with a longitudinally reciprocating forked loop-holder having a hooked prolongation, of a feed mechanism comprising a reciprocating bar and a bowl on said bar to take into the said hooked prolongation for producing a lateral movement of said loop-holder, as and for the purpose set forth.

3. In a shuttle sewing mechanism adapted to produce three kinds of stitches, the combination with a longitudinally reciprocating forked loop-holder and a longitudinally reciprocating feed bar driver, of means for oscillating the said holder laterally during its forward reciprocation consisting of a hooked prolongation *c′* on one side of the fork of said holder, an inclined finger or horn c^2 on the other side of said fork, a bowl *d* on said feed bar driver, and a bowl *d′* occupying a fixed position, all substantially as herein described.

London, 14th July, 1892.

EDWARD KOHLER.

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