

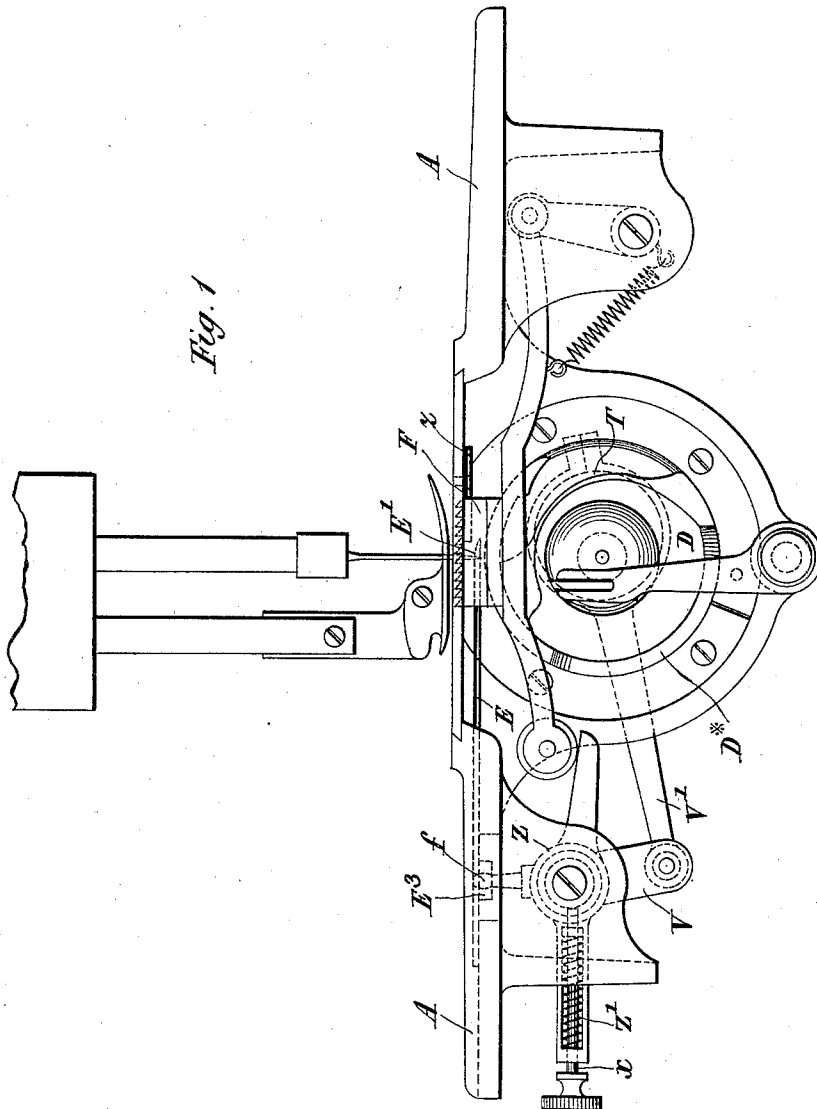
(No Model.)

5 Sheets—Sheet 1.

E. KOHLER.
SEWING MACHINE.

No. 466,906.

Patented Jan. 12, 1892.



Witnesses:-
George Barry.
O. Sunagren

Inventor:-
Edward Kohler
by attorneys
Mount Edward

(No Model.)

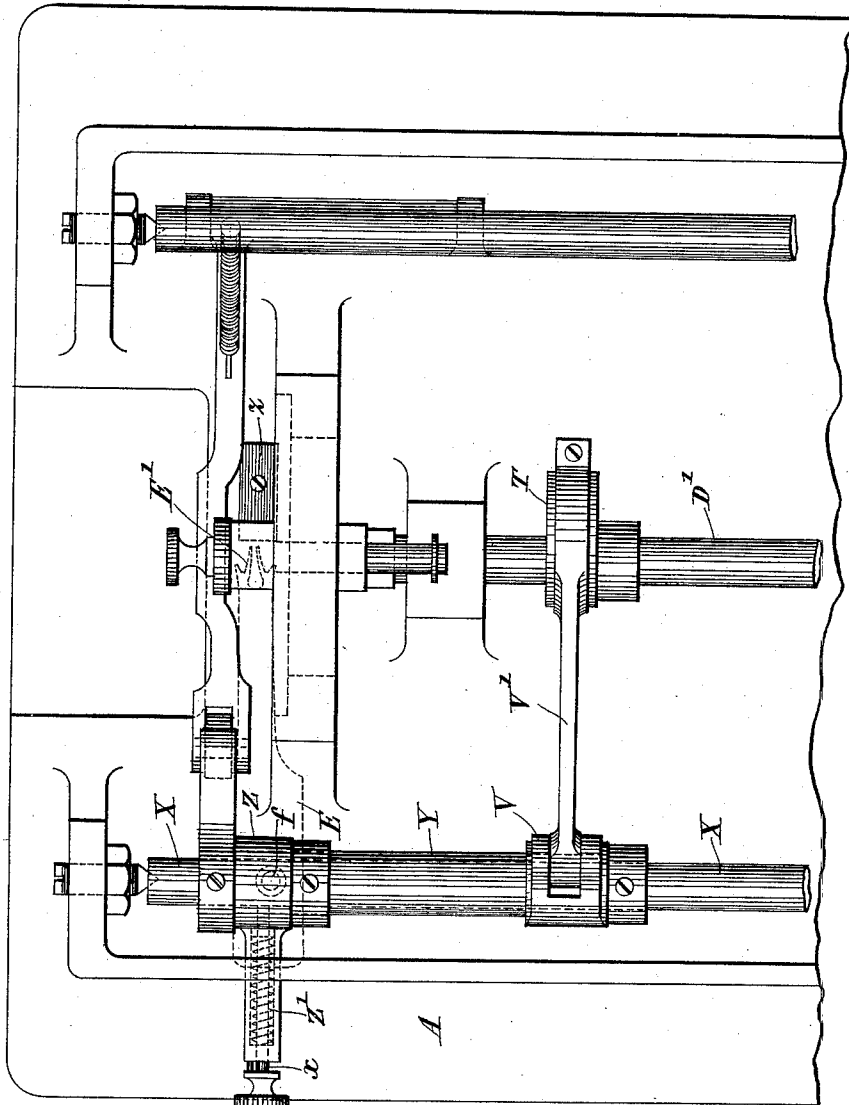
5 Sheets—Sheet 2.

E. KOHLER.
SEWING MACHINE.

No. 466,906.

Patented Jan. 12, 1892.

Fig. 2



Witnesses:-
George Barry.
O. Sundgren

Inventor:-
Edward Kohler
by attorneys.
Brown & Sewad

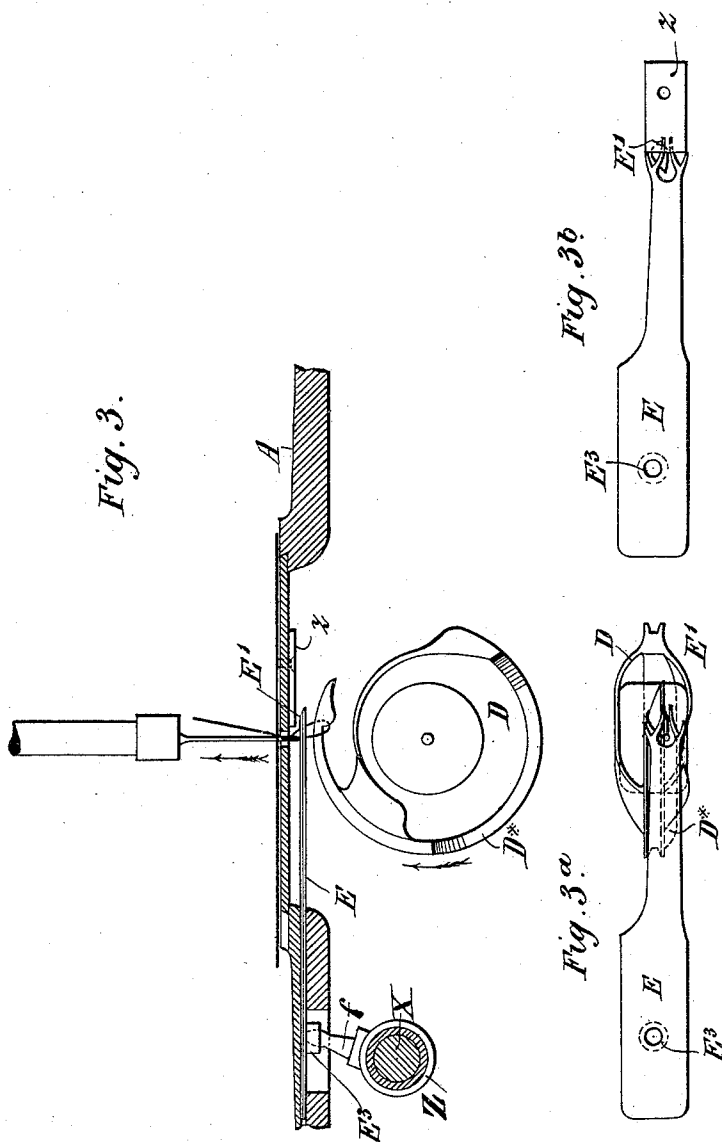
(No Model.)

5 Sheets—Sheet 3.

E. KOHLER.
SEWING MACHINE.

No. 466,906.

Patented Jan. 12, 1892.



Witnesses:
George Barry
C. Sundgren

Inventor:
Edward Kohler
by attorneys
Brown & Edward

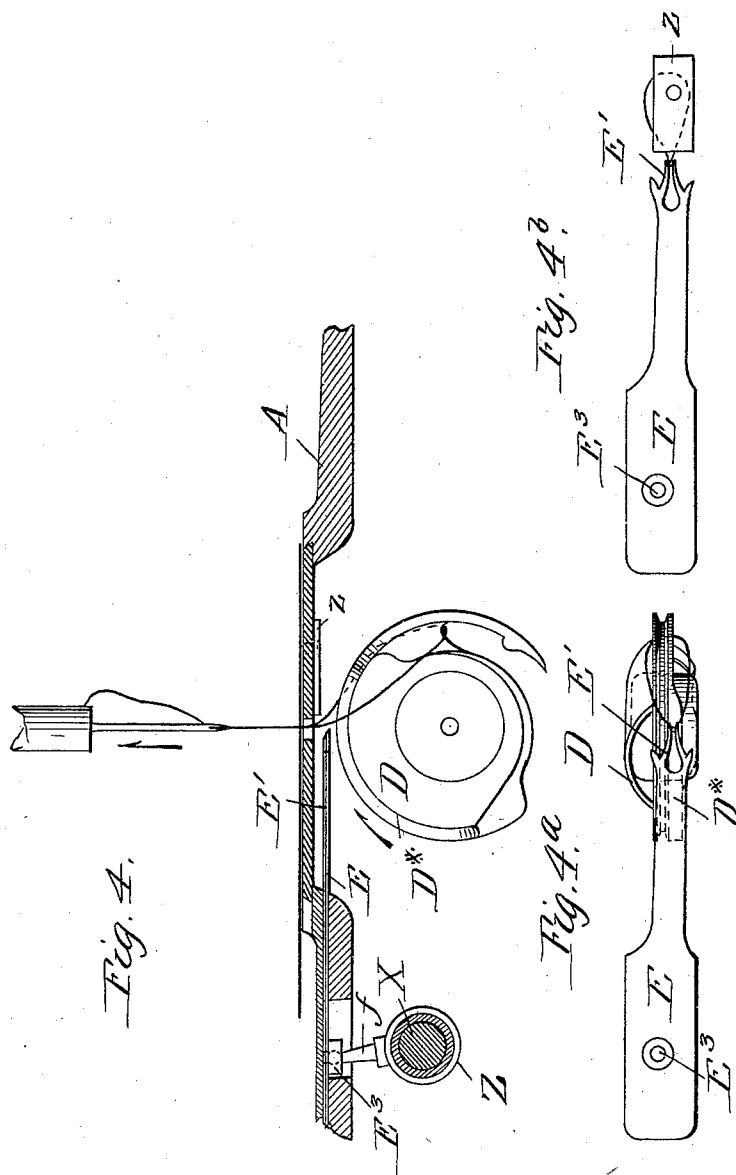
(No Model.)

5 Sheets—Sheet 4.

E. KOHLER.
SEWING MACHINE.

No. 466,906.

Patented Jan. 12, 1892.



Witnesses—
Chas. S. Sturtevant
Gales P. Moore

Inventor—
Edward Kohler,
by Brown & Swann Attys

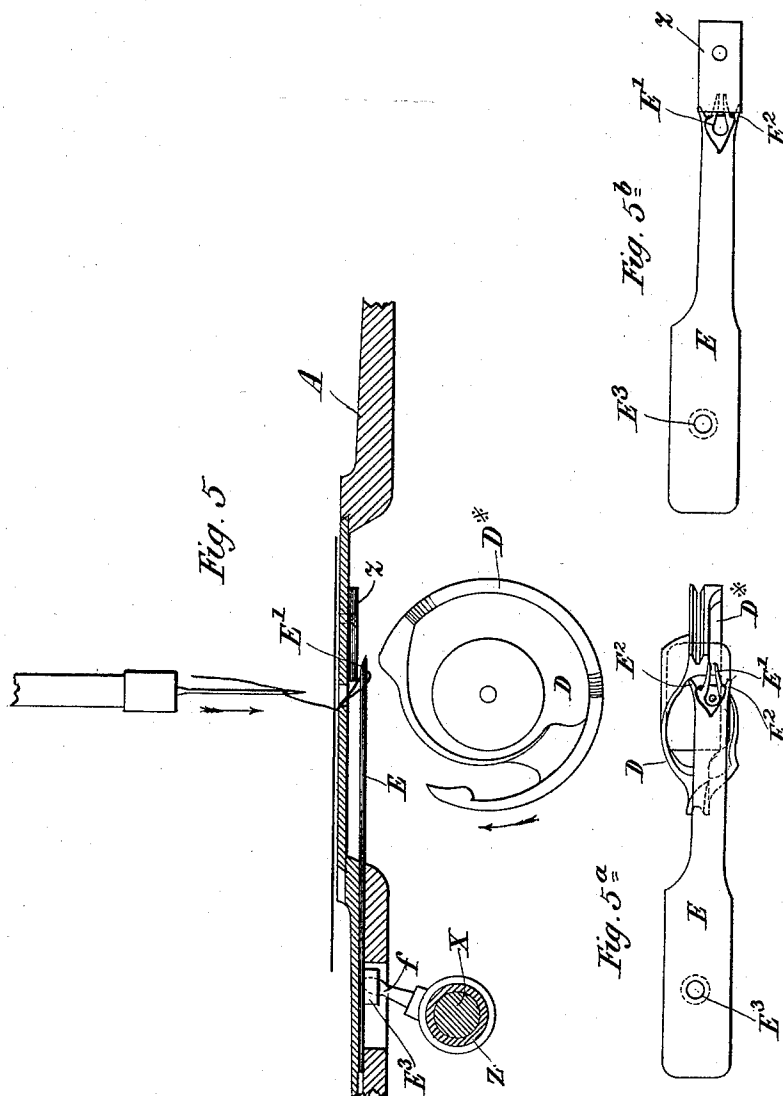
(No Model.)

5 Sheets—Sheet 5.

E. KOHLER.
SEWING MACHINE.

No. 466,906.

Patented Jan. 12, 1892.



Witnesses:

George Barry

C. Sundgren

Inventor:

Edward Kohler

by attorneys

Prosser & Howard

UNITED STATES PATENT OFFICE.

EDWARD KOHLER, OF LONDON, ENGLAND.

SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 466,906, dated January 12, 1892.

Application filed May 20, 1891. Serial No. 393,503. (No model.)

To all whom it may concern:

Be it known that I, EDWARD KOHLER, of 81 Guilford Street, Russell Square, London, in the county of Middlesex, England, have invented certain new and useful Improvements in Sewing-Machines, of which the following is a specification.

This invention relates to what are known as "hook lock-stitch sewing-machines;" and its object is to render such machines capable of producing either a lock-stitch or a chain-stitch at will.

The improvement consists in the combinations hereinafter described and claimed, whereby that object is attained.

In the accompanying drawings, Figure 1 is an end view of so much of a hook lock-stitch sewing-machine as is necessary to show the adaptation of my invention thereto. Fig. 2 is an under side plan view. Figs. 3, 3^a, 3^b, 4, 4^a, 4^b, 5, 5^a, and 5^b show in diagrammatic form three different positions assumed by the parts during the operation of forming the chain-stitch.

The invention may be applied to any hook lock-stitch machine, whether rotary or oscillating; but the machine shown in the drawings is that known in the trade as the "Jones rotary-hook lock-stitch machine." As these machines are well known, it is unnecessary to describe them or to show other than those parts necessary to explain my invention.

It may be well here to define what is meant in this specification by the term "hook-machine" in contradistinction to the term "shuttle machine" used in specification of my United States Patent, No. 449,818, dated April 7, 1891.

By "shuttle" is meant a loop-opening device to contain a spool or bobbin and capable of being reciprocated in a straight or curved path or rotated or oscillated in a circular race, and the body of which is entirely on one side of the line of the needle.

By "hook" is meant a loop-opening device to contain a bobbin or thread-case and capable of being rotated or oscillated in a circular race, and the body of which extends on both sides of the line of the needle.

By means of the first-named device the formed loop is drawn entirely to one side of

the needle, whereas by the other device, the formed loop is spread more or less equally on both sides of the line of the needle.

It may be further remarked that a loop-opening device consisting of a hook oscillating in a circular race the body of which extends on both sides of the needle is known in the trade as an "oscillating shuttle," and is used in some Singer machines; but for the purposes of this invention such device is classed under the term "hook."

Referring now to the drawings, A is the table of the machine.

D is the rotary hook, corresponding to the shuttle in other lock-stitch sewing-machines. This hook is set in a circular race and is actuated through a shaft D', driven in the way common to machines of this type. The bobbin may be removed from the hook or retained therein, as desired, while making the chain-stitch, provided the thread be cut off short in the latter case.

E is the reciprocating loop-holder, (the general form of which is most clearly shown at Fig. 4^b,) which consists of a plate having a fork E' and lateral projections or horns E² at its forward end and a socket E³ in its rear portion. The fork E' is designed to enter the loop formed by the rotary hook D and hold it open for the next descent of the needle, and thereby produce a chain-stitch when desired. The exact form of the loop-holder may, however, be varied to some extent; but in every case it will be provided with a fork to enter and hold open the loop. The reciprocation of the loop-holder is effected by means of the pin f, which takes into the socket E³ of the loop-holder E.

In the hook machines it will not be necessary for the loop-holder to oscillate as well as reciprocate, as in the shuttle machines, for the reasons before mentioned—viz., that in the shuttle machines the loop is drawn by the shuttle or opening device entirely to one side of the needle, and to bring the open loop and present it to the needle it is evident that the loop-holder with the loop upon it must be moved sidewise.

In the hook-machine the loop is spread so as to extend on both sides of the vertical axis of the needle, and consequently the loop-

holder may reciprocate in line with the needle and the sidewise motion will be unnecessary.

The pin *f* is fitted to a collar *Z*, having a projecting arm *Z'*, and mounted loosely on a sleeve *Y*, which is mounted loosely on the shaft *X*. This shaft operates to lift the feed-dog *F* in the usual manner and forms no part of the present invention. The arm *Z'* carries the spring locking-pin *x*, by which the collar *Z* may be locked to the sleeve *Y* when desired, as will be well understood. The sleeve *Y* is rocked through the arm *V* (keyed thereon) and connecting-rod *V'* by an eccentric *T* on the shaft *D'*. The loop-holder *E* is therefore actuated from the eccentric *T* in such a manner that a "dwell" is provided for at the most forward point of its reciprocating motion and a comparatively quick motion at another part of its stroke. The above is a convenient arrangement for reciprocating the loop-holder; but any other arrangement may be employed without departing from the nature of my invention. Upon the under side of the throat-plate a short plate *z* is fixed close to the needle-hole and in line with the travel of the loop-holder *E*, the object of which is to hold the loop inside the horns or projections *E'* of the loop-holder *E* (see Fig. 5^b) during the take-up, so that the slackened thread shall not jump off the fork *E'* and cause a "missed stitch."

In order to insure the fork of the holder *E* entering the loop, I may secure on the side of the hook *D* a metal strip *D**, which slightly spreads the loop at its upper part.

The only change required to convert the lock-stitch machine to a chain-stitch machine will be to adjust the locking pin or bolt *x* to lock the collar *Z* to the sleeve *Y* and to remove the hook-bobbin or to sever the hook-thread close to the bobbin.

To change the chain-stitch to the lock-stitch it is only necessary to bring the loop-holder *E* to its most backward position and then unlock the bolt *x*, which will permit of the sleeve rocking without moving the pin-collar *Z* and to replace the hook-bobbin.

The advantages of my invention are that

the fixing of detachable appliances to the machine to change the stitch is obviated; also, that besides the locking and unlocking of the parts the only other change necessary is the removing and replacing of the bobbin, a matter of almost hourly occurrence with sewing-machinists and one that is well understood, or to cut off the hook-thread, as before described.

The bobbin-thread may be retained in work when an effective embroidery-stitch will be produced, especially if the bobbin-thread is of a different color.

Having now described my invention, what I claim is—

1. The combination, with a needle and a hook the body of which extends on both sides of the needle for opening the loop of the needle-thread, of a reciprocating forked loop-holder for entering and retaining the loop and holding the same open in the path of the needle, substantially as herein described.

2. The combination, with the needle and throat-plate of a sewing-machine and a hook for taking and expanding the loops of the needle-thread, of a reciprocating forked loop-holder having lateral horns or projections *E'*, and a plate *z*, secured to the under side of the throat-plate in the line of travel of the said loop-holder, substantially as herein described, for preventing the thread from jumping off the fork of the loop-holder.

3. The combination for driving the reciprocating loop-holder, consisting of the rotary shaft *D'*, the shaft *X* parallel therewith, the loose sleeve *Y* upon the said shaft *X*, the collar *Z* loose upon said shaft, the pin *f*, carried by said collar and engaging with the loop-holder, the eccentric *T*, carried by the rotary shaft *D*, connections, substantially as herein described, between said eccentric and said sleeve *Y*, and a locking-bolt *x* for locking said collar to said sleeve, substantially as herein set forth.

EDWARD KOHLER.

Witnesses:

H. K. WHITE,
A. W. SPACKMAN.