No. 659,482. Patented Oct. 9 1900

H. A. KLEMM.

OVERSEAMING SEWING MACHINE.

(Application filed Mar. 22, 1900.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

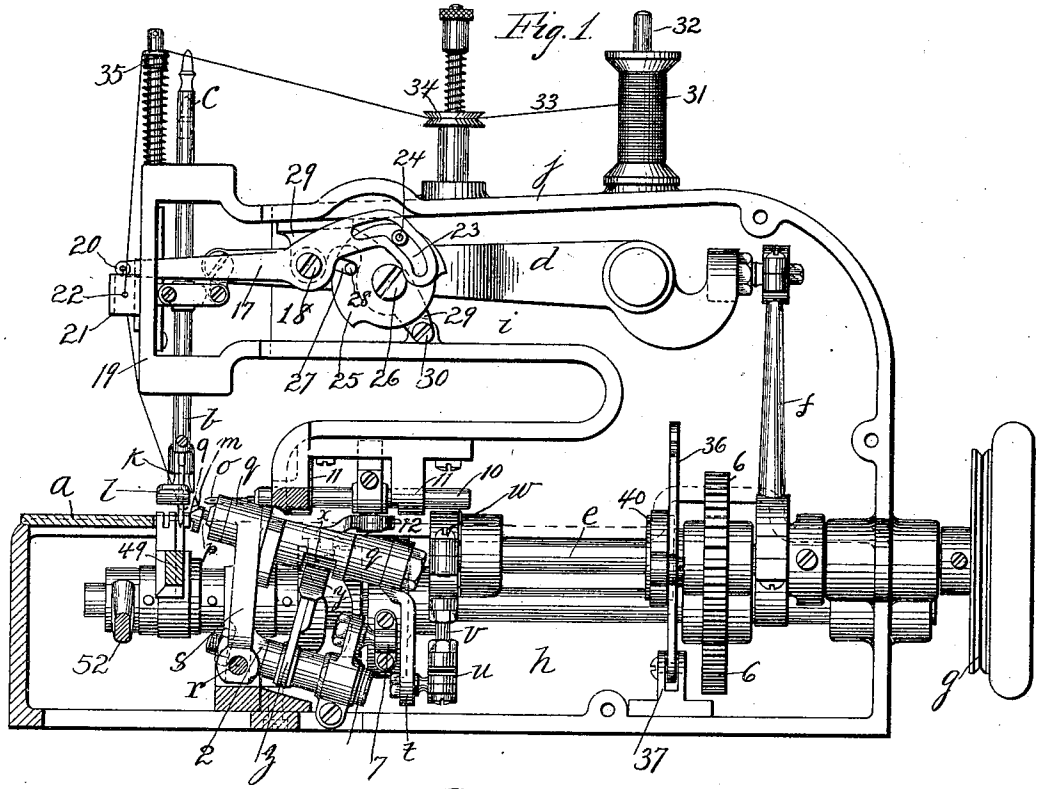
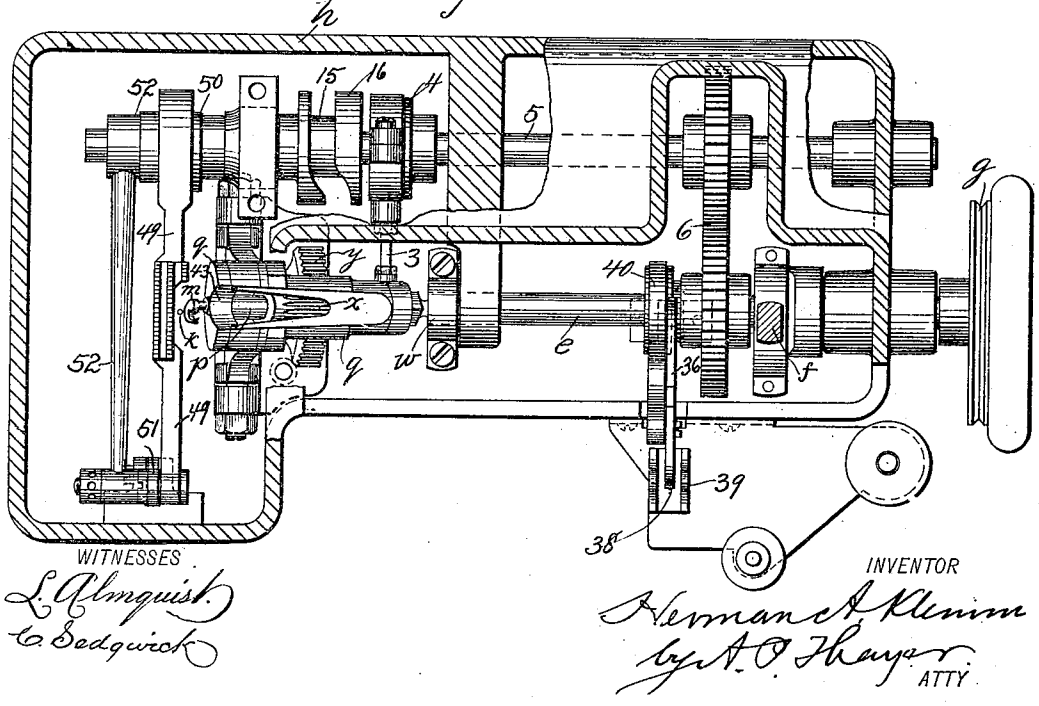


Fig. 2.



WITNESSES

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Fig. 10.

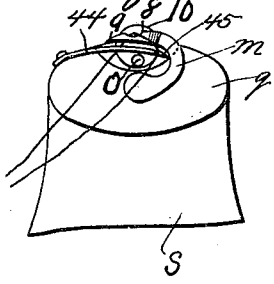


Fig. 3.

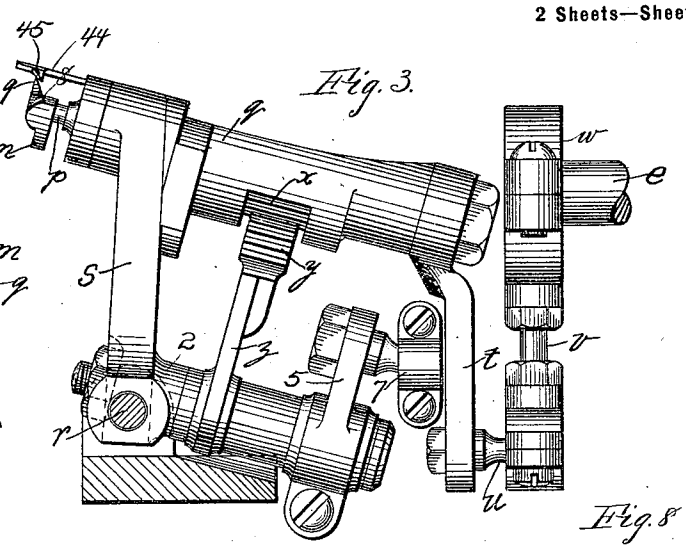


Fig. 8

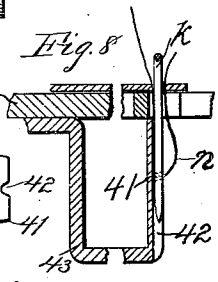


Fig. 7.

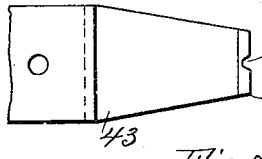


Fig. 4.

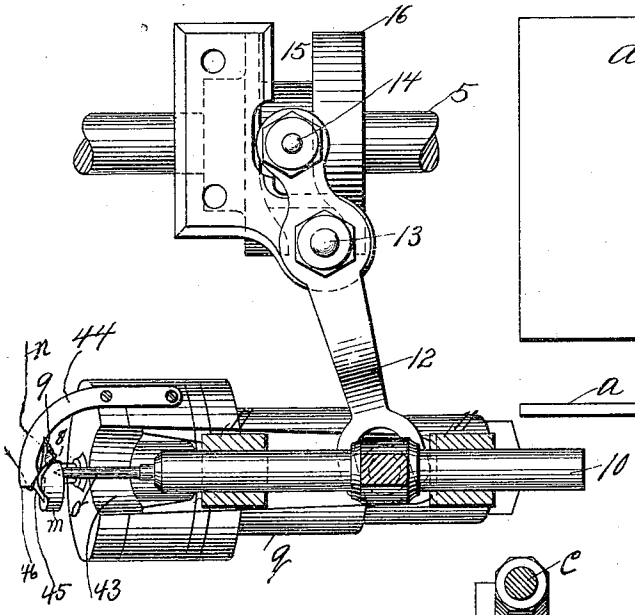


Fig. 5.

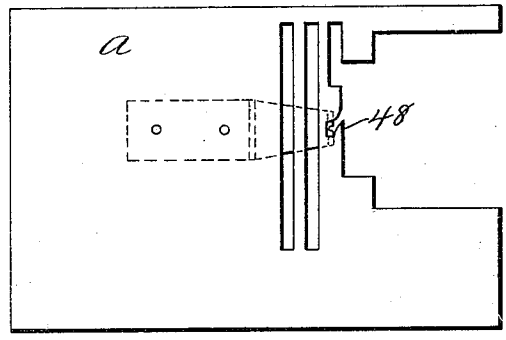


Fig. 6.

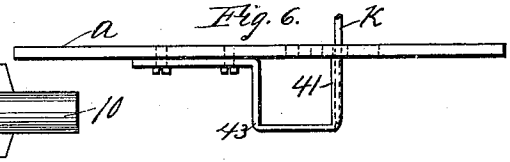
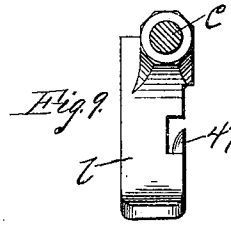


Fig. 9.



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UNITED STATES PATENT OFFICE.

HERMANN A. KLEMM, OF NEW YORK, N. Y.

OVERSEAMING SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 659,482, dated October 9, 1900.

Application filed March 22, 1900. Serial No. 9,691. (No model.)

To all whom it may concern:

Be it known that I, HERMANN A. KLEMM, a citizen of the United States of America, and a resident of New York city, county and State of New York, have invented certain new and useful Improvements in Overedge Sewing-Machines, of which the following is a specification.

This invention relates to apparatus for sewing overedge-seams on a horizontal work-plate by means of a vertical needle, rotatory hook, and a reciprocating loop-thread carrier; and it consists, essentially, of means whereby the hook after taking the needle-loop under the work is caused to shift backward from under the work, so as to swing up clear of the edge of the work when carrying the thread up to the looper, and to shift forward under the work when returning for another loop, all as hereinafter described, reference being made to the accompanying drawings, in which—

Figure 1 is a side elevation of my improved machine with the side plate of the case removed and with some parts in section. Fig. 2 is a plan view with parts of the top of the case and some of the looper mechanism removed and with the connecting-rod for working the needle-operating lever in section. Fig. 3 is a detail of the hook-operating parts in side elevation on a larger scale for greater clearness. Fig. 4 is a detail of the looper mechanism in plan view and on an enlarged scale. Fig. 5 is a plan view of the work-plate. Fig. 6 is an edge view of the work-plate and a loop-controlling attachment for the needle-thread. Figs. 7 and 8 are details of the loop-controller for the needle-thread on an enlarged scale. Fig. 9 is a plan view of the presser-foot. Fig. 10 is a detail of the looping-hook and its adjuncts as seen looking from the left-hand side of Fig. 3.

The general construction of the machine is about the same as usual in machines having a horizontal work-plate *a*, upright needle-bar *b*, presser-bar *c*, needle-bar-operating lever *d*, main driving-shaft *e*, connecting-rod *f*, and driving-pulley *g*, said shaft being in a vertical plane including the needle-bar and the parts being inclosed in a case comprising a base part *h* and a part *i* in the needle-bar and presser-bar-supporting arm *j*.

k represents the needle, and *l* the presser-foot working in conjunction with the work-plate, as usual, said plate being perforated for the needle.

m represents the hook for engaging the needle-thread loop *n* under the work-plate and carrying it up past the edge of the work to be engaged by the looper *o* when carrying its thread forward to the needle over the work. The hook is carried on the extremity of the rotatory oscillating shaft *p*, mounted in the tubular support *q*, arranged in the vertical plane of the main shaft and needle and carried on the standard *s*, pivoted at *r*, so as to swing toward and from the needle. The rear extremity of the support *q* has a pendent arm *t*, coupled by a ball-joint *u* with the rod *v* of an eccentric *w*, carried on the forward extremity of the main shaft *e*, which imparts the swinging motion to the hook. The shaft *p* of the hook has a toothed pinion *x*, which gears with a toothed segment *y*, carried on an arm *z*, pivoted in a hub 2 of the rocking support *s* and coupled by the arm 5 and rod 3 with an eccentric 4 on the shaft 5 back of and parallel with the main shaft and geared with it by the spur-wheels 6. The rod 3 and arm 5 are coupled by a ball-joint 7, affording freedom for the rocking motion of the hook-carrying support, by which the hook is caused to swing under and from under the work, and the toothed segment for oscillating the hook-shaft being carried on the same rocking support imparts at the same time the oscillating movements of the hook. The parts are so timed that the hook swings forward under the work when the point is turned down to engage the thread-loop, and it swings backward from under the work prior to the rise of the point of the hook far enough to interfere with the work. The hook has a shoulder 8 at the base of its point 9 to limit the reach of the point through the loop which it takes from the needle, and the support *q* carries a spreader 44, having a point 45, onto which the hook carries the needle-loop, so that one member of the loop lodges against a shoulder 46 at the base of the point to spread the loop and insure certain entry of looper *o* thereto.

To provide ample development of the nee-

dle-thread loop *n* on the side of the needle from which it is to be taken by the hook, a vertical guard 41 is provided on the other side of the needle to prevent the thread from looping that way, and thus insuring its engagement by the hook. This guard is grooved on its side next to the needle, as shown at 42, and is placed in such close proximity to the needle that the needle works in the groove, and thus more effectively develops the loop. The guard is attached to the under side of the work-plate *a* by a bracket 43, but may be attached in any approved way; but said guard is not claimed herein.

The looper *o* is mounted in the end of the reciprocating bar 10, supported in bearings 11 and coupled with the long arm of a lever 12, pivoted at 13 and having a stud 14 working in the groove 15 of a cam 16 on the shaft 5. By introducing the lever 12 between the looper-bar and the cam and by connecting the long arm of the lever to the bar and attaching the stud to the short arm a cam of much shorter throw can be utilized than in an arrangement by which a stud attached to the looper-bar works in the groove of the cam, which makes an easier motion and is less wearing on the cam.

The hook-support *q* is inclined downward from the front backward and is grooved at 43 along the upper front part for clearance of the looper-bar and its adjuncts; but so far as its function is concerned it may range in a level plane if the looper-bar be arranged to permit it, as said bar may obviously be so arranged.

The take-up for the needle-thread consists of the lever 17, pivoted at 18 in the chamber of the supporting-arm *j*, with its long arm reaching through the head 19 and having a plunger 20 suspended from it within a yoke 21, attached to the head and perforated at 22 for the thread, which also passes through the plunger, which is similarly perforated, so that when the plunger rises it draws the thread up in a loop, and thus takes up its slack and completes the stitch. The other arm of the take-up lever has a slot 23, in which a stud 24 of a rocking disk 25 works, which is mounted on the pivot 26 and has a slot 27, in which a stud-pin 28 of the needle-bar-operating lever *d* works to operate the rocker. The shape of the cam-slot determines the action of the plunger. The pivot-stud 26 of the rocker is supported in an arm of the bracket 29, supporting the lever-pivot 8, said arm having its extremity secured at 30 to a lug of the lower flange of the case of the needle-bar-supporting arm. The needle-thread spool 31 stands on the spindle 32 on the top of the needle-bar-supporting arm, the thread 33 passes through the tension devices 34 and 35, and then through the take-up to the needle. This take-up device is claimed in my pending application, Serial No. 15,186, filed May 2, 1900, and is not claimed herein.

The take-up for the looper-thread consists of the elbow-lever 36, pivoted at 37, with its perforated end 38 working in the perforated yoke 39, said lever being actuated by an eccentric 40 on the shaft *e;* but I do not claim this take-up device.

The presser-foot and the work-plate are each provided with a tongue 47 and 48, respectively, reaching along in the direction of the feed movement inside of the needle from their base connections with the presser-foot and the work-plate forward of the needle in the feed-line to a suitable extent for the thread-loops to be formed and drawn on in taking up the slack of the stitches, so as to avoid drawing too much on the work. After being thus drawn up on the fingers the stitches pass off the tongues as the work feeds along.

The stitches are formed in practically the same manner as in other machines having a hook taking the needle-thread loop up over the edge of the work lying on a horizontal work-plate and holding them for the looper carrying a thread through the needle-loops to the needle and need not be more particularly described.

The hook-support may obviously be arranged to slide toward and from the needle with like results.

The feed-bar 49 is coupled at one end to rest on an eccentric on shaft 5 at 50 for being raised to grip the work and is pivoted at the other end to the upper end of a vibrating standard 51, to which the end of a connecting-rod 52 is connected for imparting the reciprocating movements of the feed-bar, said connecting-rod being operated by an eccentric at 52 on shaft 5. The feed-bar is free to reciprocate on its lifting-eccentric; but this is the subject of a claim in my pending application, Serial No. 8,715, filed March 15, 1900, and is not claimed herein.

What I claim as my invention is—

1. In an overedge sewing-machine the combination of a horizontal work-plate, vertically-operating needle, means for operating said needle, a rotatory oscillating and reciprocating hook, a support for said hook, and means for operating said support adapted for shifting the hook forward and backward under the work, a reciprocating looper, a support for said looper, and looper-operating mechanism, said support and operating mechanism both independent of the hook supporting and operating mechanism.

2. The combination with the vertically-operating needle and horizontal work-plate, of the rotatory oscillating hook and reciprocating looper, a support for the hook having rocking motion adapted to shift the hook toward and from the needle under the work, means for so operating said support, and means for imparting the oscillating motion of the hook on such rocking support.

3. The combination with the vertically-operating needle and horizontal work-plate, of the rotatory oscillating hook and reciprocating looper, a rocking support for the hook

adapted to shift the hook toward and from the needle under the work, the main shaft and eccentric thereon connected with said support for so operating it, and means for imparting the oscillating motion of the hook on such rocking support, also means for operating the looper.

4. The combination with the vertically-operating needle and horizontal work-plate, of the rotatory oscillating and reciprocating hook adapted to shift forward under the work to engage the needle-thread and backward from under the work to clear the edge of the work in carrying the needle-loop up to the looper, means for operating said hook and means for operating the looper, said means consisting of the lever connected with the looper-bar, and the cam on the counter-shaft connected with the lever.

5. The combination with the vertically-operating needle and its operating mechanism, the rotatory and reciprocating looping-hook, and the reciprocating looper and operating mechanism therefor, of the spreader, said spreader being supported independently of the hook and looper and adapted to receive the needle-loops on its end when raised up by the hook and spread them for the looper.

Signed by me at New York, N. Y., this 21st day of March, 1900.

HERMANN A. KLEMM.

Witnesses:

C. J. APPLETON,

J. V. HAGEMAN.