No. 645,815. Patented Mar. 20, 1900.

H. A. KLEMM.

OVERSEAMING SEWING MACHINE.

(Application filed June 5, 1899.)

(No Model.) 3 Sheets—Sheet 1.

Fig. 1.

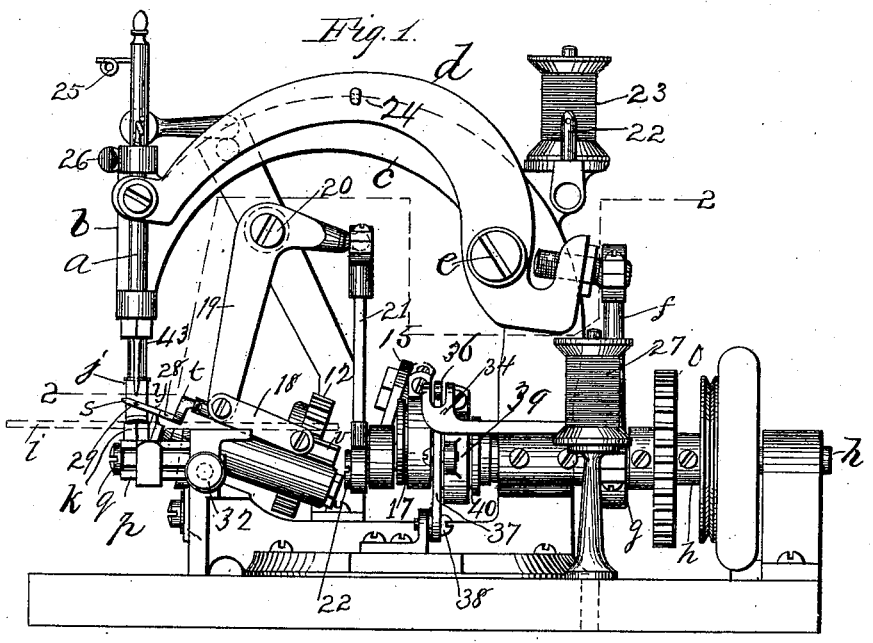
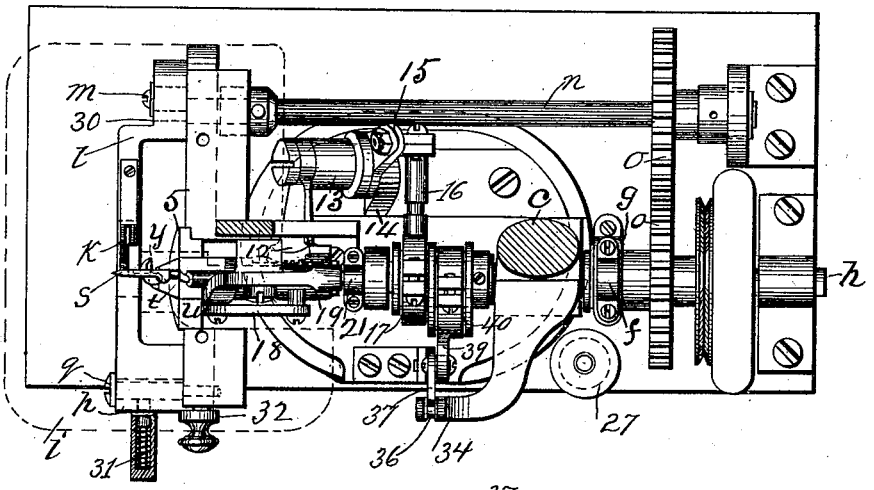


Fig. 2.



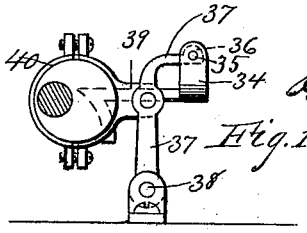


Fig. 13.

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Fig. 3.

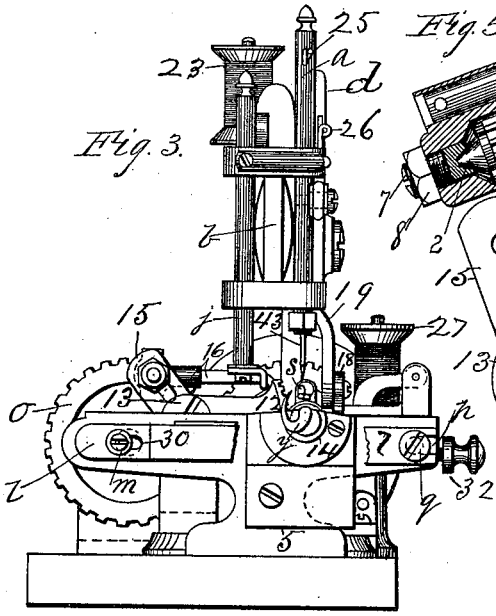

Fig. 5.

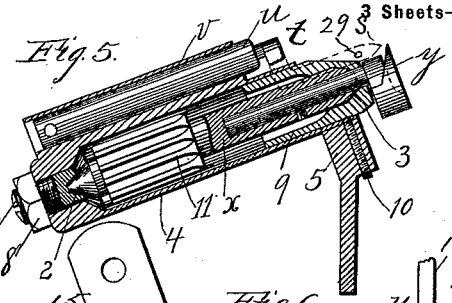

Fig. 6.

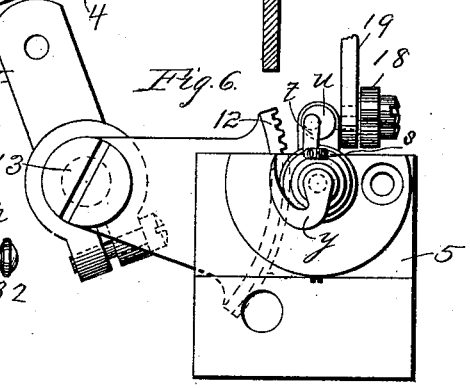

Fig. 4.

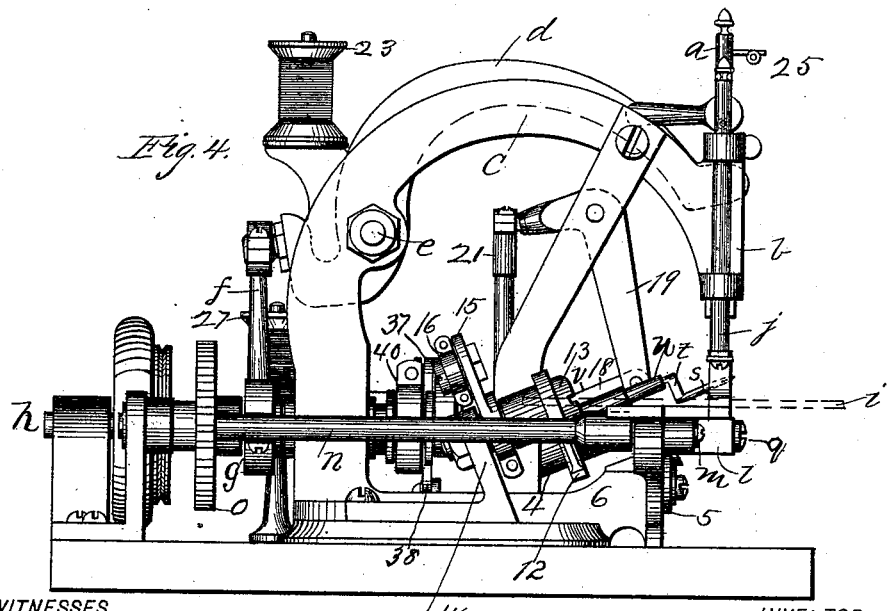

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Fig. 7.

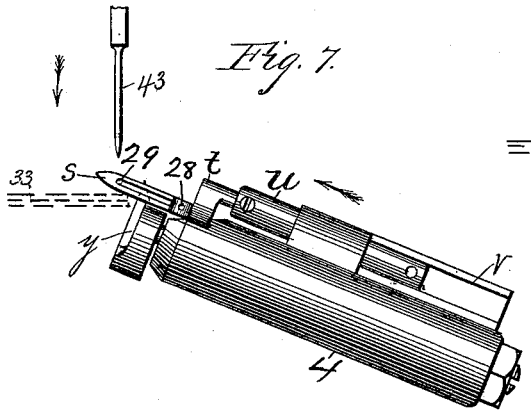


Fig. 10.

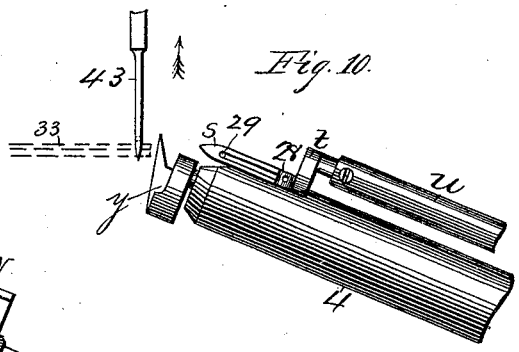


Fig. 8.

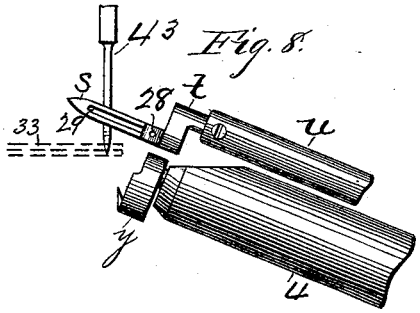


Fig. 11.

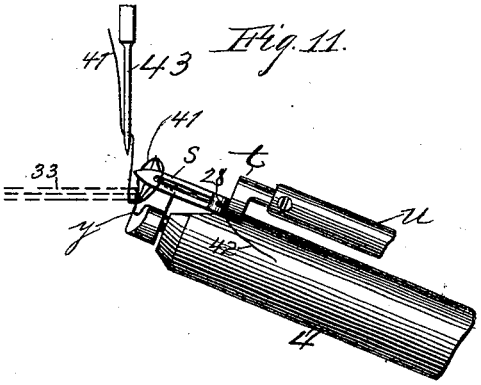


Fig. 9.

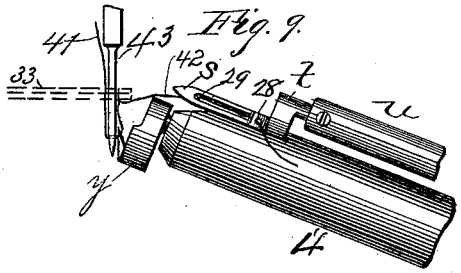
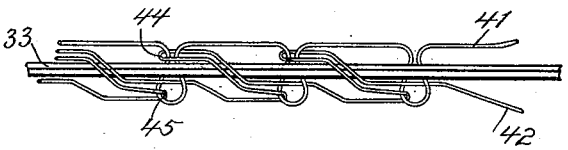


Fig. 12.



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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. 645,815, dated March 20, 1900.

Application filed June 5, 1899. Serial No. 719,475. (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 the borough of Brooklyn, New York city, and State of New York, have invented certain new and useful Improvements in Overedge Sewing-Machines, of which the following is a specification.

My invention consists of improvements in overedge sewing-machines, whereby looping mechanism is combined with a vertically-operating needle and a horizontal work-supporting table in a way to operate to better advantage than when the work is carried with the edge upright between the faces of horizontal feed-disks, as hereinafter described, reference being made to the accompanying drawings, in which—

Figure 1 is a side elevation of my improved overedge sewing-machine. Fig. 2 is a plan view of the parts below the line 2 2, Fig. 1, on which the arm supporting the upper parts is sectioned. Fig. 3 is an end elevation as seen looking from the left hand of Fig. 1. Fig. 4 is a rear elevation. Fig. 5 is an enlarged longitudinal sectional detail of the looping-thread carrier and the looping-hook apparatus. Fig. 6 is an enlarged detail of the looping mechanism as seen on a smaller scale in the end elevation of Fig. 3. Figs. 7 to 11, inclusive, are enlarged details of the needle looping-thread carrier and the looping-hook as seen on a smaller scale in the front elevation of Fig. 1, the parts being in different positions relatively to each other in the different figures to illustrate the operations. Fig. 12 is a diagrammatic illustration of stitches made in the work. Fig. 13 is an elevation of the looping-thread take-up device.

The needle-bar *a* is mounted vertically in the head *b* of a stationary supporting-arm *c* and is operated by a lever *d*, pivoted at *e* and coupled by a rod *f* with an eccentric *g* on the main driving-shaft *h*, practically the same as in many well-known sewing-machines. The ordinary horizontal work plate or table *i* and presser *j* are used, and also the feeder *k*; but the means for operating the feeder are changed to permit a shorter main shaft to be used to provide space for the looping apparatus to be described farther on.

The bar *l*, on which the feeder *k* is mounted, is pivoted at one end on the crank-pin *m* of a shaft *n*, located at the rear of the main shaft and parallel with it, and also geared with it for being rotated synchronously with it, the cog-wheels *o* being the means of so gearing them. A slotted hole is formed in bar *l* for said crank-pin to permit variation of the lengths of the movements to vary the feed. The dotted line 30, Fig. 2, indicates the length of the slot. The other end of the feeder-carrying bar *l* is mounted by its slotted end *p* on the stud-pin *q*, on which it oscillates and reciprocates as is required for its functional service, which is practically the same in this as in other machines. The spring 31 causes the retraction of the feed-bar, and the collar of the adjustable stud-screw 32 limits the extent of the retraction.

The loop-thread carrier *s*, hereinafter called the "looper," is mounted by an offset arm *t* on one extremity of a sliding bar *u*, arranged in a slideway *v* in the vertical plane of the main shaft, or practically so, and in a downwardly-sloping inclination from the needle toward the right-hand side of the machine, so that when the looper is moved forward it passes upward obliquely over the edge of the work 33 for the needle to take its loop, as indicated in Fig. 7. Directly under this slideway and parallel with it is the shaft *x*, carrying at its upper extremity the looping-hook *y*, which is to catch a loop of the needle-thread under the work and carry it up over the edge of the work to be caught by the looper to pass the looping-thread through it when the loop of said thread is thrust forward by the looper for receiving and being secured by the needle-thread, as indicated in Fig. 11. The shaft *x* has center pivot-bearings 2 and 3, which are carried in a support 4, mounted on a standard 5, carried on the bed-plate 6, said support 4 being a tubular structure, in the lower end of which the bearing 2 is inserted, said bearing being a taper socket formed in the end of a screw 7, fitted in a screw-tapped hole of the support 4 and secured by a check-nut 8. The bearing 3 for the upper end of shaft *x* is a socket formed in a tubular bearing-piece 9, inserted in the upper end of the tubular support 4 and secured by a set-screw 10. The shaft *x* has near its lower end a pinion 11, with which a toothed oscillating driving-seg-

ment 12 gears to impart rocking motion to the hook, said segment being mounted on the rock-shaft 13, pivoted on the standard 14, and having an arm 15 coupled by a rod 16 with an eccentric 17 on the main shaft.

For operating the sliding looper-carrying bar *u* it is connected by the link 18 with one extremity of the bell-crank lever 19, pivoted at 20, and connected by its other extremity with the rod 21, which is connected with the crank-pin 22 on the inner extremity of the main shaft *h*.

The needle-thread is to be carried on the spool 23, from which the thread will pass through suitable guides 24, 25, and 26, and any approved form of take-up will be employed, which it is unnecessary to show, as it forms no part of the invention.

The looper-thread is to be carried by the spool 27 and will be conducted through any suitable guides to the looper, where it enters the hole 28 from the front side, as seen in Figs. 1 to 11, and is threaded back again through the hole 29 near the point of the looper.

A practicable take-up device for the looper-thread may consist of a forked piece 34, having a guide-eye 35 through each member of the fork, with a vibrating guide 36 working forward and backward between the two fork members, the thread being strung through these guides and the vibrating guide being contrived in any approved way for being operated in due relation to the movements of the looper. For instance, it may have a bell-crank-lever attachment 37, mounted on a supporting-pivot 38 and coupled by a rod 39 with an eccentric 40 on the main shaft *h*, for vibrating it; but this is not claimed as part of the invention.

Referring to Figs. 7 to 12, 41 represents the needle-thread, 42 the looper-thread, and 43 the needle. When the needle, being in the position represented in Fig. 7, begins its downward movement, the looper *s* moves upward far enough for the needle to descend between the looper and its thread 42 in passing through the work 33, as shown in Fig. 8. The looper then retires, leaving its loop 44 around the needle, while the needle descends still farther, and the hook *y* engages the needle-thread under the work, as indicated in Fig. 9, and carries a loop thereof up over the edge of the work, through which needle-thread loop the looper passes when moving up again to the needle, as indicated in Fig. 11, and the needle then engaging a new loop of the looper-thread, as indicated in Fig. 8, holds it while the loop of the needle-thread taken off the hook by the looper draws the loop 45 up under the work when drawn taut by its take-up and draws the doubled looper-thread across the edge of the work, as shown in Fig. 12.

It will be seen that I have thus provided an overedge sewing-machine wherein the ordinary horizontal work-holding plate may be used, and much of the other apparatus, which is advantageous in the matter of construction and in operation. In operation the work is so similar to that of the ordinary machine that special practice is not required to enable an operator of one to work the other.

The machine is more advantageous than those in which the work goes upright between the feeding-disks, because in such machines there is necessarily much obstruction under the disks to the passage of the bulk of the work, while in this there is no such obstruction whatever, no matter how bulky, all the space to the left hand of the needle and presser being free. The work-plate *i* is notched at the right hand of the needle and presser to afford free space for the looper and hook apparatus; but this is no detriment, there being no part of the work requiring support at the right hand of the line of the edge being sewed. By the way the looping-thread is drawn around the edge of the work the seam is flatter than common overedge seams, which are generally rolled or ribbed more or less, especially in the case of selvage edges, which may be seamed quite flat in my improved machine. Any approved form of edge-guide may be employed to guide the work relatively to the overseaming devices.

What I claim as my invention is—

1. In an overedge sewing-machine, the combination with an upright needle and horizontal work-plate, feed mechanism, and means for operating the needle and feed mechanism, of the rotatory oscillating hook, the axis of which lies in a vertical plane of the needle and forms an obtuse angle with the needle whereby said hook is adapted to take a loop of the needle-thread from under the work obliquely upward past the edge of the work, and the reciprocating looper lying in a vertical plane of the needle and also at an obtuse angle thereto and adapted to pass through said needle-thread loop and deliver a loop of its thread to the needle over the work, also means for operating said hook and looper.

2. In an overedge sewing-machine, the combination with an upright needle and horizontal work-plate, feed mechanism, and means for operating the needle and feed mechanism, of the looper, and a rotatory oscillating hook, the axis of which hook lies in a vertical plane of the needle and forms with the needle-axis an obtuse angle such that the hook taking the needle-loop under the work will by its rotating motion clear the edge of the work in carrying said loop up to the looper, said looper adapted to deliver the looping-thread to the needle over the work, also means for actuating said hook and looper.

Signed by me at New York, N. Y., this 27th day of April, 1899.

HERMANN A. KLEMM.

Witnesses:
A. P. THAYER,
C. SEDGWICK.