

No. 660,777.

Patented Oct. 30, 1900.

H. A. KLEMM.
OVERSEAMING SEWING MACHINE.

(Application filed Jan. 22, 1900.)

(No Model.)

2 Sheets—Sheet 1.

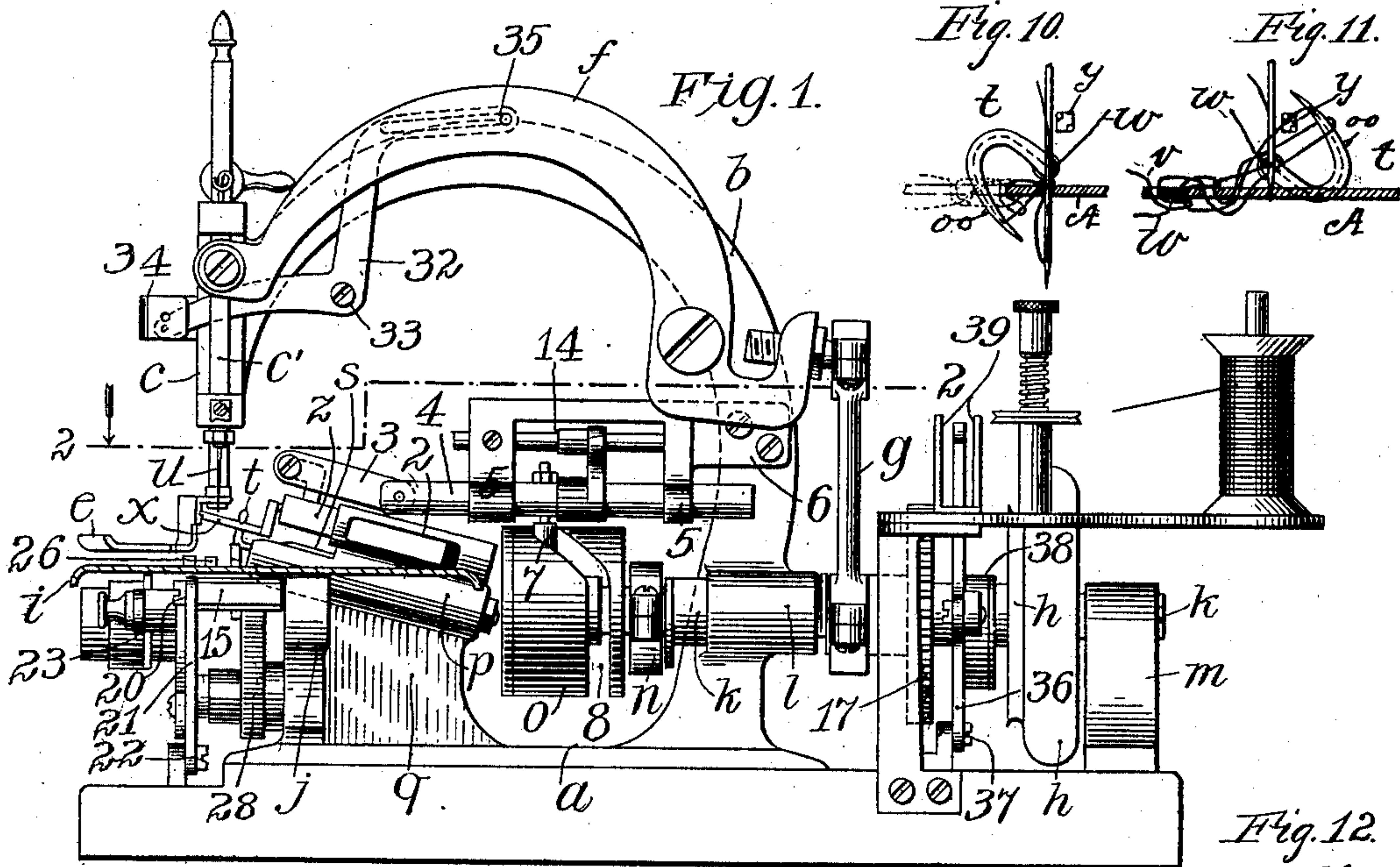


Fig. 10.

Fig. 11.

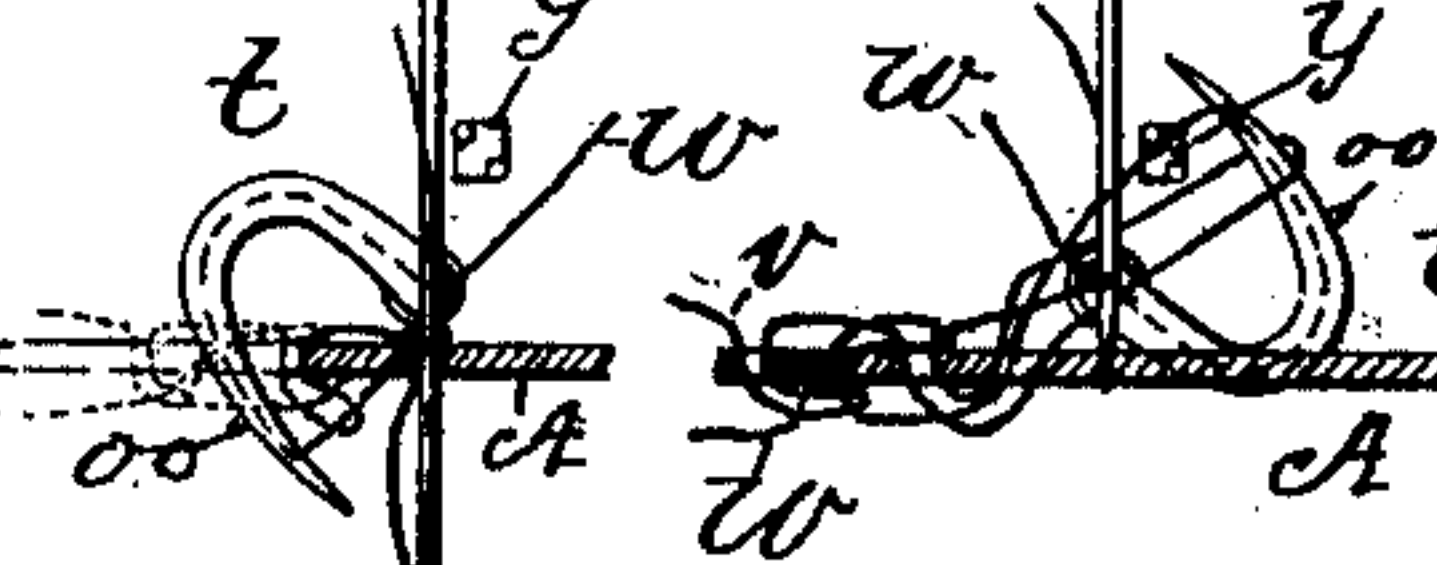


Fig. 2.

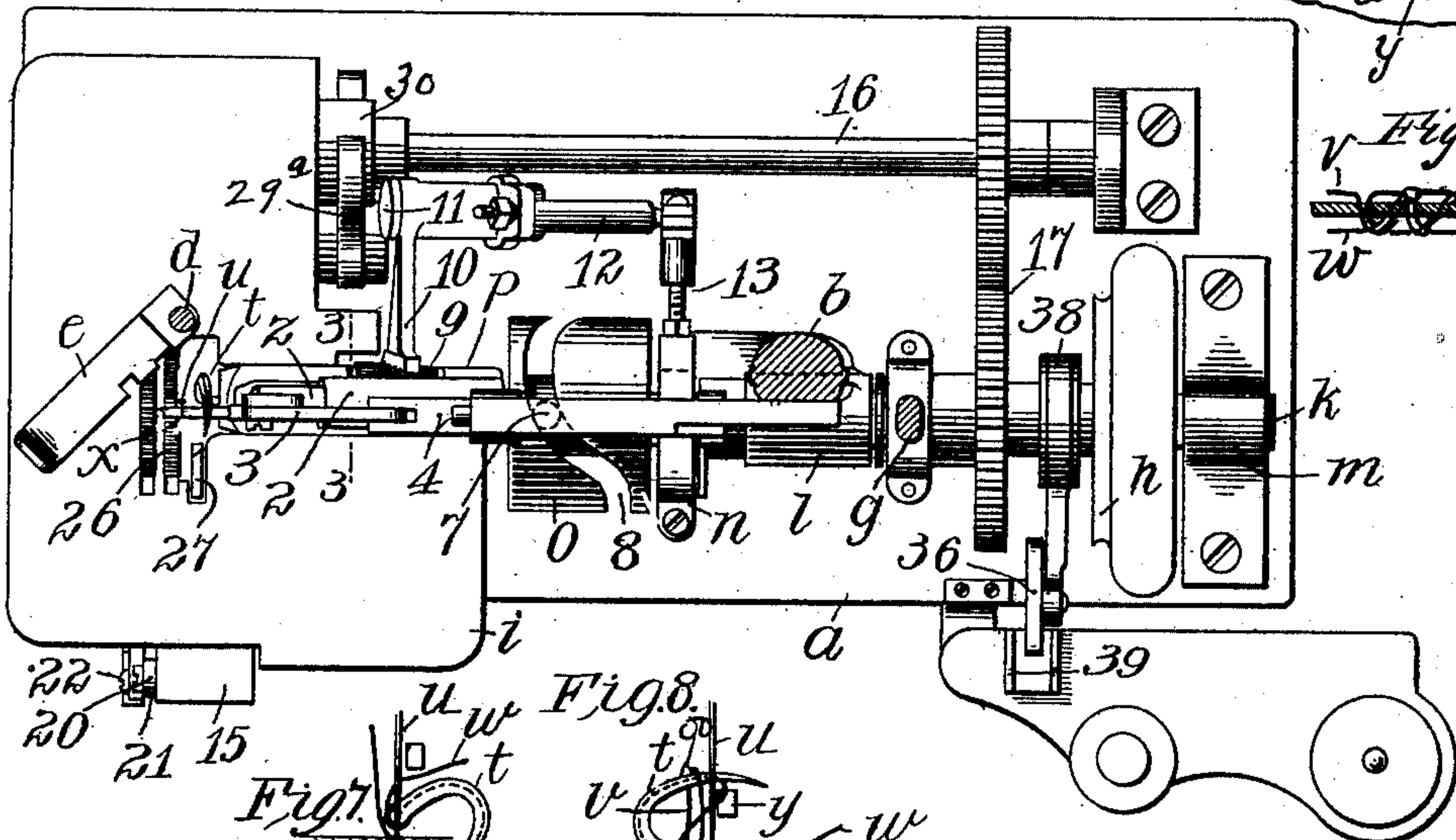


Fig. 12.

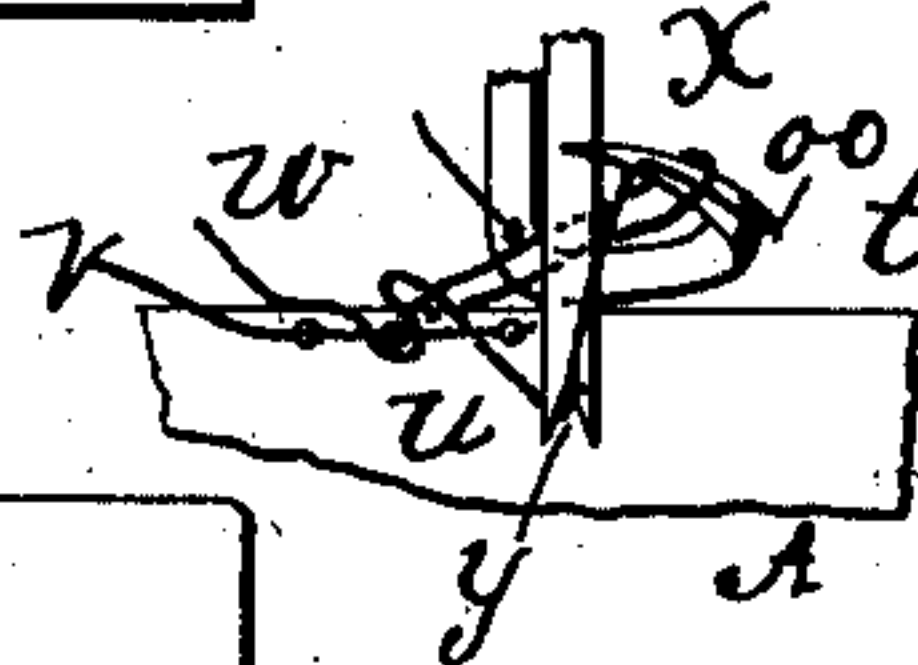
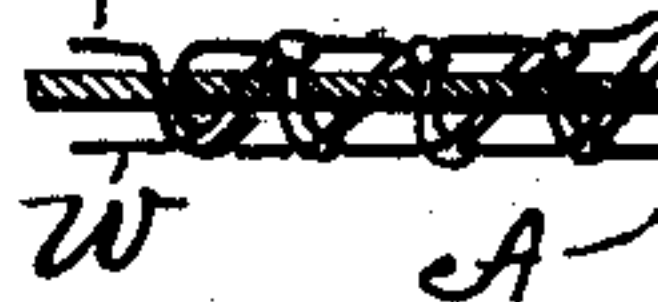
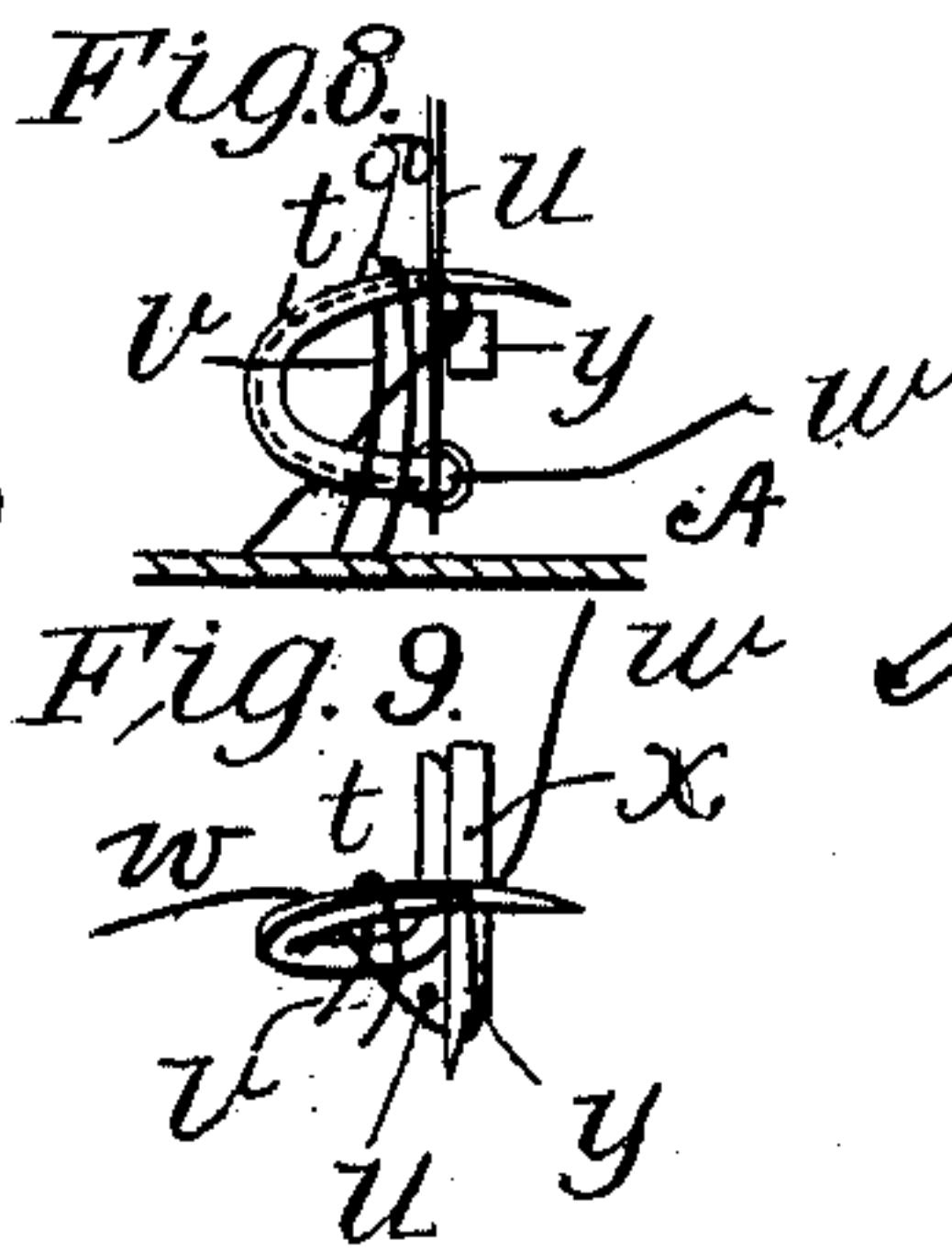


Fig. 13.



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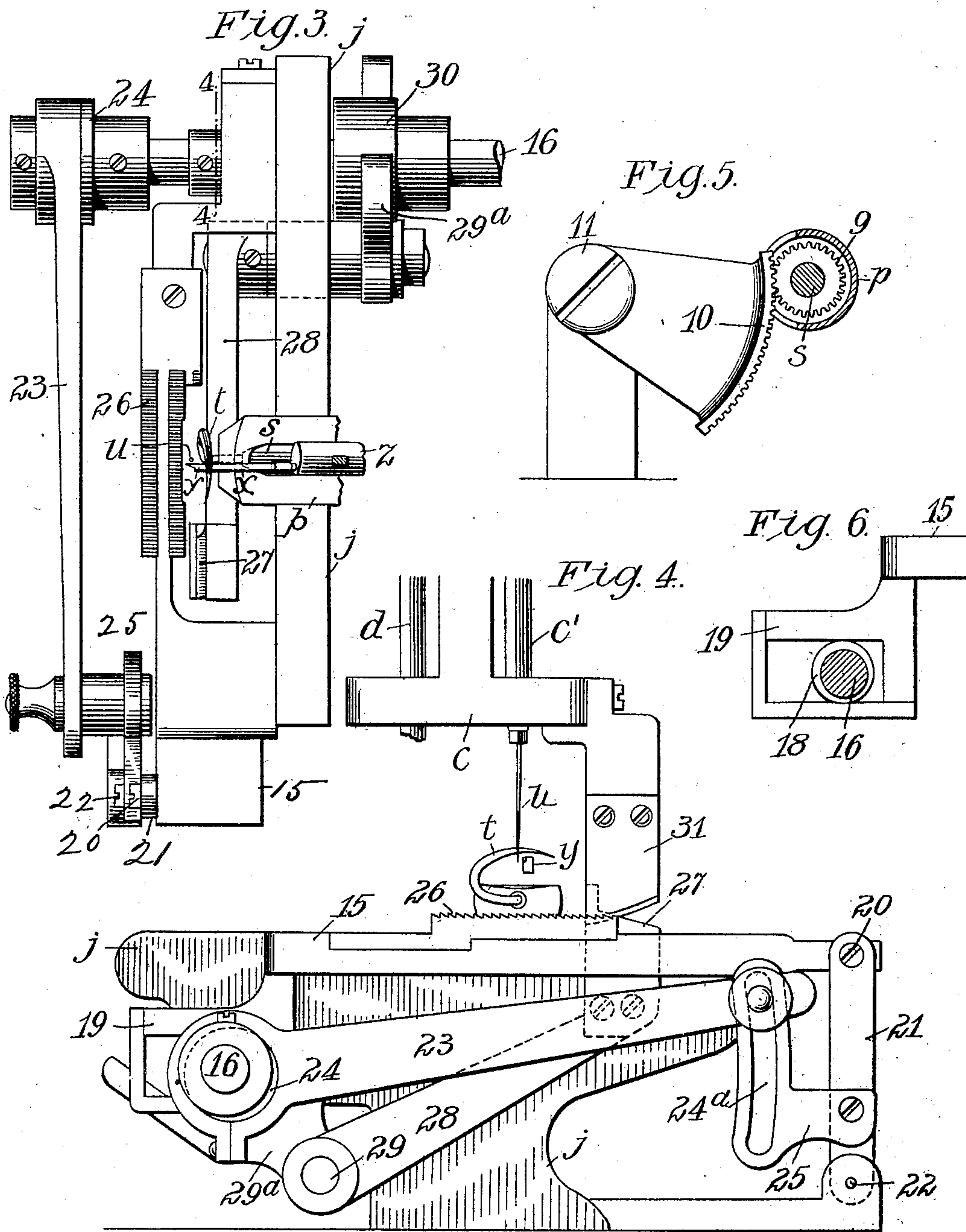
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2 Sheets—Sheet 2.



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UNITED STATES PATENT OFFICE.

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OVERSEAMING SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 660,777, dated October 30, 1900.

Application filed January 22, 1900. Serial No. 2,400. (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, city and State of New York, have invented certain new and useful Improvements in Over-edge Sewing-Machines, of which the following is a specification.

My invention relates to overedge sewing-machines of the character represented in my Patent No. 645,815, the special feature of which is a rotatory oscillating hook and a reciprocating thread-carrying looper arranged in an inclined plane in such relation with a horizontal work-plate and a vertically-operating needle that the hook which works parallel with the feed-line takes the needle-loop obliquely upward past the edge of the work to receive the looper-thread, said inclined arrangement of the hook and looper being especially favorable for overseaming on a horizontal work-plate; and my present invention comprises substantially the same elements in practically the same arrangement relatively to the work-plate and needle, but with the hook adapted for carrying the looping-thread, and in place of the looper I substitute a sliding bar carrying a loop-spreader, whereby the loops of the hook-thread are more widely opened and more favorably presented to the needle for certainty of engagement by the needle-thread; and the invention also consists of improved means of operating the loop-spreader, all as hereinafter described, reference being made to the accompanying drawings, in which—

Figure 1 is a side elevation of a sewing-machine constructed in accordance with my improvements with the work-carrying plate in section and with the presser-foot shifted out of the working position. Fig. 2 represents a plan view, with some of the parts detached, on the horizontal section-line 2 2 of Fig. 1, and also with the presser-foot shifted out of the working position. Fig. 3 is a detail in plan view on an enlarged scale. Fig. 4 is a detail in front elevation, also enlarged. Fig. 5 is a detail of the oscillating looping-hook apparatus in transverse section on line 3 3, Fig. 2. Fig. 6 is a detail of the feed mechanism, with a section of the feed-shaft, on line 4 4, Fig. 3. Figs. 7, 8, and 9 are details

of the needle, hook, and spreader, illustrating their operation in forming the stitches, the hook being arranged to turn to the right hand in forming the stitches. Figs. 10, 11, and 12 are details of the needle-hook and spreader with the hook arranged to turn to the left hand in forming the stitches. Fig. 13 is a section of the work, showing a series of stitches.

The apparatus of my invention may be applied to machines of various forms in general construction of some of the parts, as the base-plate *a*, stationary supporting-arm *b*, and its head *c*, also the needle-bar *c'*, presser-bar *d*, presser *e*, needle-bar-working lever *f*, connecting-rod *g*, driving-pulley *h*, work-plate *i*, work-plate-supporting bench *j*, and various details which it is unnecessary to define. According to my construction the main shaft *k* has one bearing at *l* on the supporting-arm *b* and another one at *m* back of said arm, said shaft only reaching forward of arm *b* sufficiently to carry the eccentric *n* and the cam-disk *o* the space between the inner end of the shaft and the bench *j*, where the shaft usually has a bearing, being occupied by the bearing *p*, carried on the standard *q*, and in which the rotating oscillating shank *s* of the looping-hook *t* is carried, said bearing being in the vertical plane of the main shaft and the needle-bar, or practically so, and it is arranged in an inclination ascending in the direction of the needle, so that the hook, which is located in close proximity to the needle *u* and ranges at right angles to its shank, will in the lower part of its course take a loop of the needle-thread *v* on its point and then pass up clear of the edge of the work *A*, so that a loop of the hook-thread *w* may be pushed forward over the work by the spreader *x* and secured by the needle-thread, said hook-thread being carried through the needle-thread loop under the work by the hook, and the hook continues lateral movement of the part of the thread traversing the eye of the hook after the point of the loop-spreader engages the thread, and thus opens a wide angular loop for the needle. The spur *o o* on the hook limits the reach of the hook through the needle-loop. The loop of the hook-thread thus presented to the needle is engaged by the needle passing through the work for the next stitch. The hook then

retires, casting off the needle-thread loop, which is then drawn up by the take-up, and the spreader also retires, preparatory to the next operations. The loop-spreader *x* is a
 5 plain straight bar having a notch or shoulder *y* near the point to catch the hook-thread. It is set in the end of the reciprocating stock *z*, said stock being mounted in the bearing 2, located on the upper side of bearing *p* for the
 10 shank of the hook in the same vertical plane and same inclination as the hook-shank.

The operation is practically the same whether the hook be arranged to turn one way or the other in its part of forming the
 15 stitches, and I have represented it in Figs. 7, 8, and 9 as adapted to turn in one direction and in Figs. 10, 11, and 12 as adapted to turn in the other direction.

In my patent hereinbefore referred to, in
 20 which the looping-thread is presented to the needle solely by the looper and the loops of the needle-thread are presented to the looper by the hook, the looper-thread loops, being drawn through the needle-thread loops, are
 25 constricted closely against the sides of the looper, so that the needle having no allowance of space between the looper and the thread between which the needle must pass must work with the greatest accuracy to avoid missing,
 30 and the same is true in the device of the Fefel patent, No. 420,191, wherein a looper carrying the looper-thread rises obliquely upward through the needle-thread loop with its thread drawn close against its sides, and a
 35 hook swinging in a vertical plane takes the looper-thread on its point and carries it forward to the needle, said loop drawing close against the sides of the hook and affording practically no allowance of space for the
 40 needle as a provision against the missing of the loops of the looper-thread by the needle.

It will be seen by reference to Figs. 9 and 12 that my present invention, in which the
 45 hook-thread is carried by the hook rotating in a plane parallel with the feed-line and so as to carry the part of the thread traversing the eye of the hook laterally from the loop-spreader after the point of the spreader engages the thread, opens a wide angular loop
 50 for the needle and avoids the possibility of missing.

The loop-spreader stock is coupled by a link 3 with a sliding bar 4, carried in bearings 5, attached at 6 to the stationary arm *b*,
 55 said bar having a stud 7 working in the cam-groove 8 of the cam-disk *o* for reciprocating it. The bar 4 being of round form in this example, guide devices 14 are provided to prevent it from turning.

60 The rotatory motion of the hook is imparted to it by a pinion 9 on the shank *s*, geared with the oscillating toothed segment 10, working on a stud-pivot 11 and coupled by arm 12 and connecting-rod 13 with the before-men-
 65 tioned eccentric *n* on the main shaft.

To operate the feed-bar 15, which cannot be operated directly by the main shaft in this

system of organization of the looping apparatus, I provide the revolving shaft 16 back of and parallel with the main shaft and reach-
 70 ing forward a suitable distance beyond the feed-line, said shaft 16 being geared with the main shaft by the spur-wheels 17 of like size, and mount one end of the feed-bar by its yoke
 75 19 on an eccentric 18, located on said shaft at the front side of the bench *j*, to effect the vertical movements of the feed-bar, the other end of said feed-bar being pivoted at 20 to a
 80 vibrating standard 21, pivoted at 22 on the base-plate and coupled by the connecting-rod 23 with another eccentric 24 on shaft 16 in front of eccentric 18, to effect the reciprocating motion to the feed-bar.

To vary the length of the feed movements, the rod 23 is coupled in the curved slot 24^a,
 85 adjustable relatively to the axis of standard 21, and while in this instance the slot is formed in a piece 25 attached to the standard it may and probably will be in practice formed in the standard. The eccentrics 18 and 24 will be so
 90 adjusted relatively to each other that the feed-bar will be shifted in the direction for effecting the feed movement of the goods simultaneously with the uplifting of the feed-bar to
 95 grip the goods against the presser by the feed-plate 26. I do not, however, claim the feed mechanism herein, it being the subject of a divisional application filed March 15, 1900, Serial No. 8,715. The feed-shaft 16 thus arranged
 100 is also available in a simple way for operating the movable blade 27 of a pair of trimming-cutters for trimming the edges of the goods in advance of the sewing, which is desirable in such machines, by the application
 105 of said cutter to the extremity of a rock-lever 28, pivoted on a stud 29 and having a forked arm 29^a embracing an eccentric 30 on said shaft, and by attaching the other blade 31 of the cutters to the head *c* of the stationary
 110 supporting-arm *b* of the machine, this eccentric being so adjusted relatively to the others that the cutters take effect when the feed is inoperative in respect to the feed movement of the goods; but I do not claim the trim-
 115 ming mechanism in this case.

The needle-thread take-up consists of the elbow-lever 32, pivoted at 33 and working in the thread-guide yoke 34, said lever being
 120 coupled by a slot and stud-pin at 35 with the needle-bar-operating lever *f*. The hook-thread take-up consists of the swinging bar 36, pivoted at 37 and coupled to the eccentric 38 on the main shaft and working in the thread-guide yoke 39; but these are not claimed and are not therefore more particularly described.
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What I claim as my invention is—

1. In an overedge sewing-machine comprising the combination with a horizontal work-plate, vertically-operating needle, feed mechanism and means for operating said needle
 130 and feed mechanism, of a rotatory oscillating thread-carrying hook, and a reciprocating loop-spreader, said hook arranged with its axis in an inclined plane in such relation to

the work-plate that the hook works in a plane parallel to the feed-line and obliquely to the vertical plane for engaging the needle-thread loops and swinging upward past the edge of the work for engagement of its thread by the loop-spreader, said spreader consisting of a sliding bar having a notched end that engages the hook-thread and presents widely-spread loops thereof to the needle, said hook continuing the lateral movement of its thread relatively to the spreader after engagement of said thread by the spreader for so spreading the loops.

2. In an overedge sewing-machine comprising the combination with a horizontal work-plate, vertically-operating needle, feed mechanism and means for operating said needle and feed mechanism, of a rotatory oscillating thread-carrying hook, and a reciprocating loop-spreader, said hook arranged with its axis in an inclined plane in such relation to the work-plate that the hook works in a plane

parallel to the feed-line and obliquely to the vertical plane for engaging the needle-thread loops and swinging upward past the edge of the work for engagement of its thread by the loop-spreader, said spreader consisting of a sliding bar having a notched end that engages the hook-thread and presents widely-spread loops thereof to the needle, said hook continuing the lateral movement of its thread relatively to the spreader after engagement of said thread by the spreader for so spreading the loops, also means for operating the loop-spreader consisting of the reciprocating sliding bar coupled with the loop-spreader stock, and the grooved cam on the main shaft, said cam coupled with the sliding bar.

Signed by me at New York, N. Y., this 20th day of January, 1900.

HERMANN A. KLEMM.

Witnesses:

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