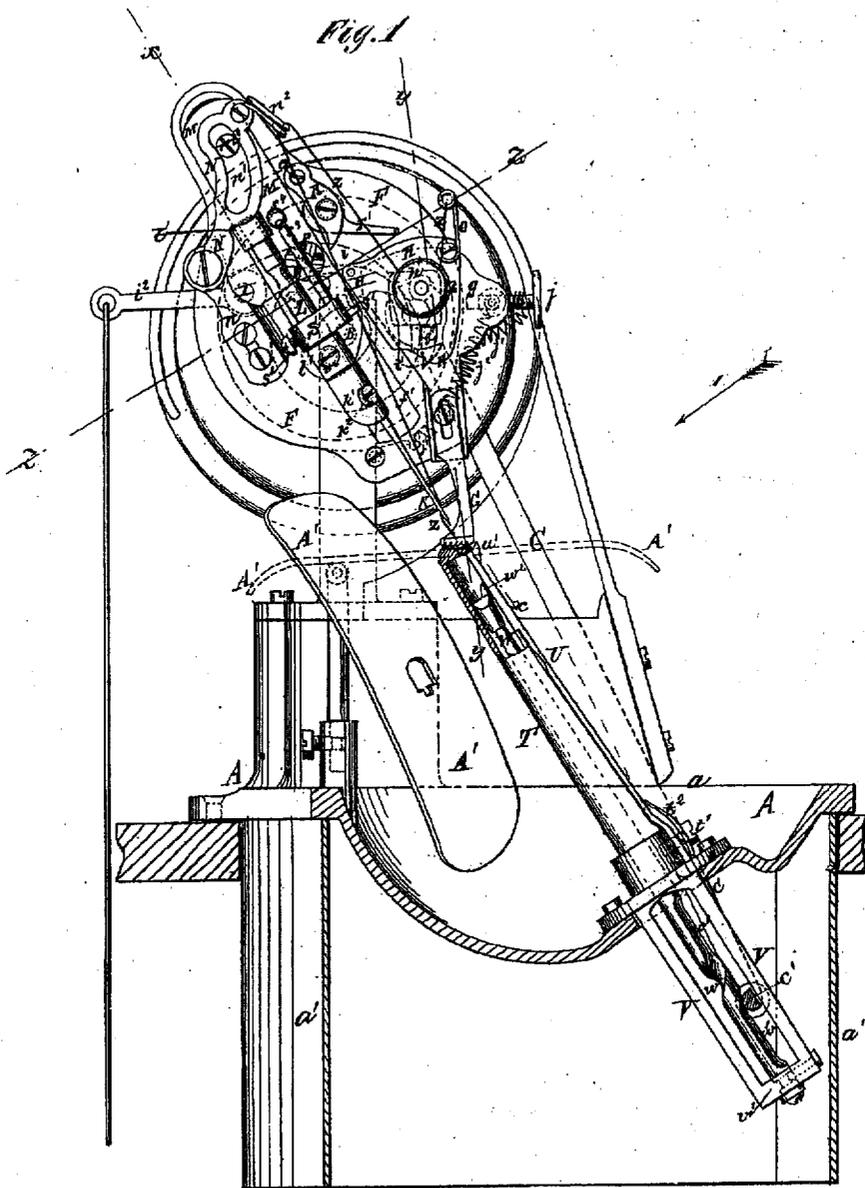


H. P. HENRIKSEN.  
MACHINE FOR SEWING GLOVES.

No. 188,515.

Patented March 20, 1877.



Witnesses.  
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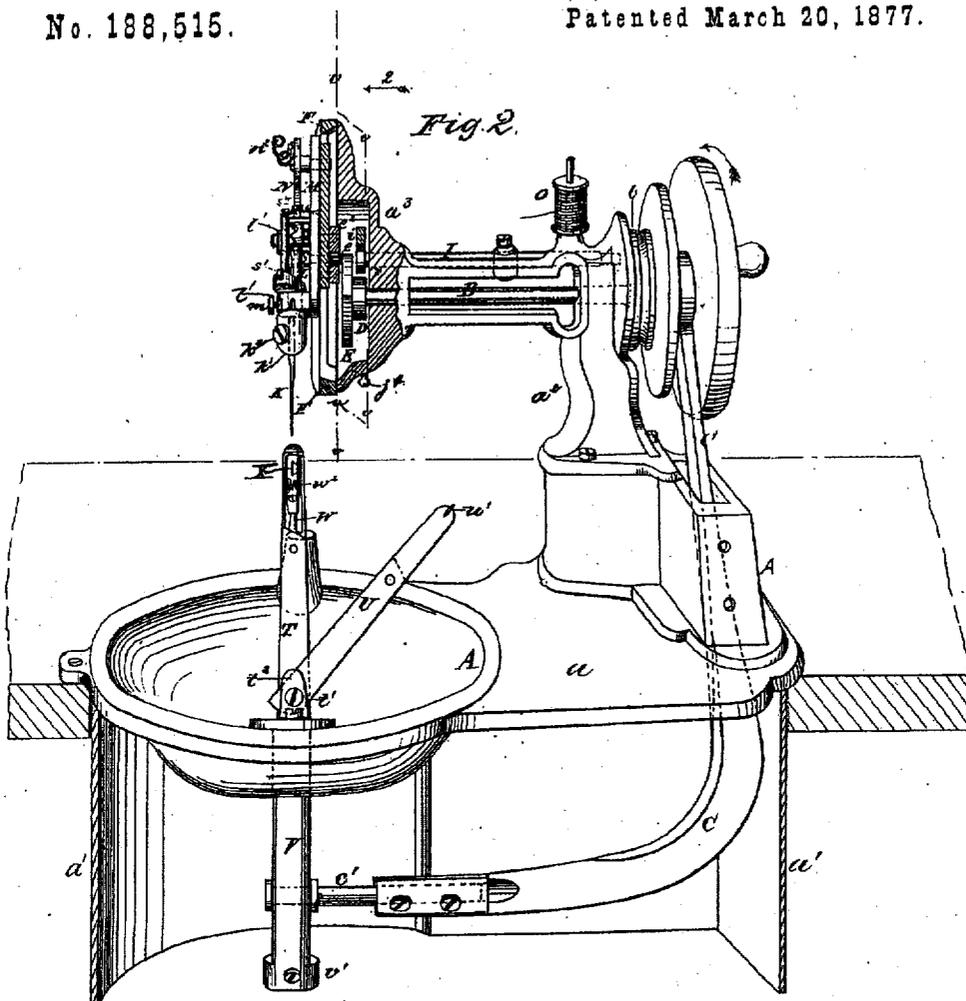


Fig. 3

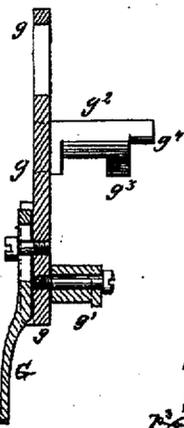


Fig. 4

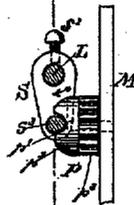


Fig. 6

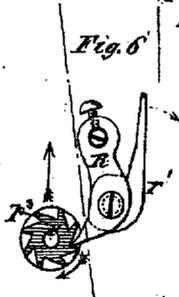
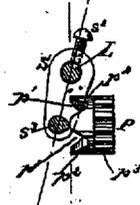


Fig. 5



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Fig. 7

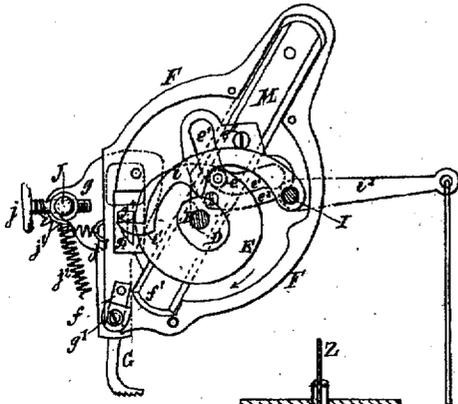
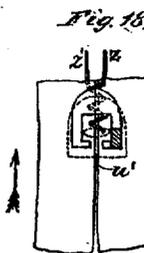
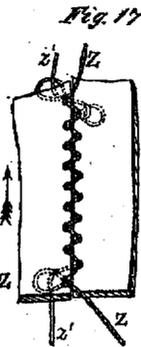
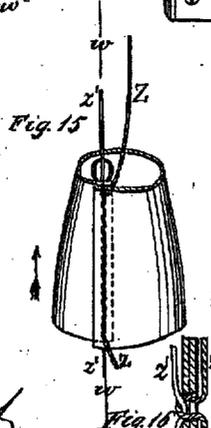
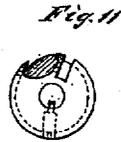
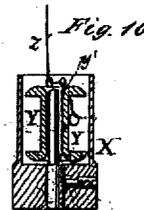
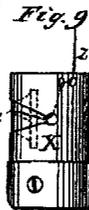
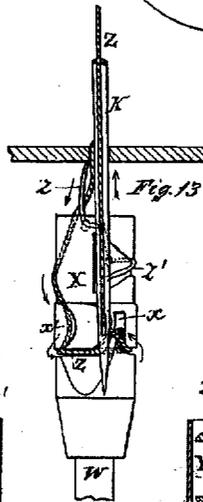
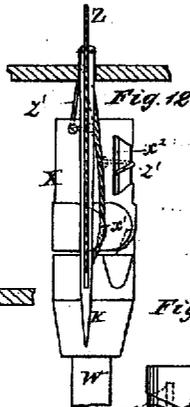
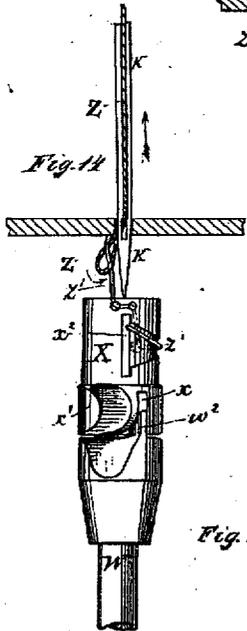
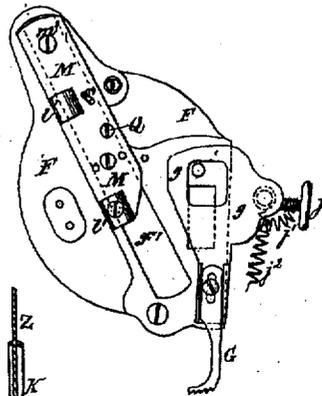


Fig. 8



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# UNITED STATES PATENT OFFICE.

HANS P. HENRIKSEN, OF COPENHAGEN, DENMARK, ASSIGNOR TO HIMSELF  
AND LUDVIG HANSEN, OF BROOKLYN, NEW YORK.

## IMPROVEMENT IN MACHINES FOR SEWING GLOVES.

Specification forming part of Letters Patent No. 188,515, dated March 20, 1877; application filed  
December 26, 1876.

To all whom it may concern:

Be it known that I, HANS PETER HENRIKSEN, of Copenhagen, Denmark, and a resident of Brooklyn, New York, have invented certain new and useful Improvements in Glove-Sewing Machines, of which the following is a specification:

The object of my invention is to produce a glove-sewing machine by which every seam required on a glove can be sewed perfectly and conveniently, with either a straight or a zig-zag seam, and by lock-stitch.

The invention consists in the construction and combination of the various parts, as will be hereinafter described, with reference to the accompanying drawings, in which—

On Sheet 1, Figure 1 is a front elevation, partly in section, of a glove-sewing machine constructed according to my present invention. On Sheet 2, Fig. 2 is a perspective view, partly in section, through the line *x x* of Fig. 1, taken from the side where the operator sits, or in the direction indicated by the arrow 1 on Sheet 1. Fig. 3 is a detail section (through the line *y y* of Fig. 1) of the presser-foot and feeder, and the plate to which it is attached. Figs. 4 and 5 are detail sections (through the line *z z* of Fig. 1) of the needle-bar and crank-pin, showing the different positions of the same, and of the ratchet and shift wheel to produce a straight and zigzag seam. Fig. 6 is a detail of a section of a ratchet and of the pawl and cam lever for operating the same. On Sheet 3, Fig. 7 is a detail section through the line *v v* of Fig. 2, seen in the direction of arrow 2, showing the reverse or inside of the side plate with the movements for operating the needle, feed, and presser foot. Fig. 8 is the outside view of the said plate, the needle-bar, ratchet and pawl, and the tension-plate being removed. Fig. 9 is a side view of the shuttle. Fig. 10 is a vertical section of the same and of the spool therein. Fig. 11 is an end view of the lower end of the shuttle. Figs. 12, 13, and 14 are front views of three different relative positions of the shuttle, shuttle-carrier, and needle, exhibiting three different stages of forming the lock-stitch. Fig. 15 represents a portion of a glove-thumb, sewed with the straight seam on a lap-joint. Fig.

16 is an enlarged section of the said stitch, taken through line *w w* of Fig. 15. Fig. 17 represents the zigzag stitch on an edge-to-edge joint, or a flush joint. Fig. 18 shows two pieces of skin held in position on the finger-table by the presser-foot for edging and joining by the cross-stitch.

Similar letters of reference indicate corresponding parts in the different figures.

A is the frame of the machine, the horizontal part *a* of which is attached by screws onto a table. A casing, *a'*, surrounding the parts of machinery underneath the frame A, is fitted through a suitable opening in the table. *a''* is the upright portion of the frame, provided with a horizontal shaft, B, revolved by treadle motion, in the usual manner, transmitted by a belt or cord to the pulley *b*. A crank-pin transmits the motion of the shaft B to reciprocate a connecting-rod or angular bar, C, which operates the shuttle, as will be hereinafter described.

From the shaft B the necessary motion is transmitted to operate the three main essential parts, viz: the feed, needle, and shuttle. On the shaft B are two cams, D E, for the movements of which ample room is provided by recessing an enlargement, *a''*, of the vertical portion *a''* of the frame A, which part *a''* I will here call the head of the frame A. F is the movements-plate, mentioned in describing Figs. 7 and 8, attached to the head *a''*. It is provided with a slot, *f*, for guiding the feed and presser-foot, and another slot, *f'*, for guiding the needle-bar slide. G is the presser-foot secured to a plate, *g*, which latter is also provided with a swiveled guide-block, *g'*, sliding in the slot *f*, and a stationary block, *g''*, having a toe-piece, *g'''*, and a pin projection, *g''''*.

The plate *g* is prevented from side play by being fitted to move closely between the tension-plate H and the head-plate F, the plate H being secured to the plate F by a pin and the tension-screw, the latter passing through an opening in the plate *g* large enough to allow of a free movement of the last-named plate. Parallel with the shaft B is fitted a shaft, I, on which is pivoted a lifting-hook, *i*, provided with a toe, *i'*, and operated by the cam D.

Through a stud, J, on the plate *g* is fitted a set-screw, *j*, by the contact of which (adjustable by turning the screw) with the edge of the head-plate F, the throw of the feed, and thereby length of stitch, is regulated.

A spiral spring, *j*<sup>1</sup>, connects the screw *j* with the plate F at *j*<sup>2</sup>, and a stronger coiled spring, *j*<sup>2</sup>, connects the stud J with the head *a*<sup>2</sup> at *j*<sup>1</sup>, the united effort of the two springs tending always to pull the stud J and plate *g* toward the plate F, and downward toward the point *j*<sup>1</sup>, which latter direction of the force causes the presser-foot to rest on the finger-table. These are the necessary details for working the feed and presser-foot. Their operation is as follows:

While the needle is in the lowest position, and thus holding the material still on the finger-board, the presser-foot is raised by the toe *i* on the hook *i*, lifting the plate *g* by the pin *g*<sup>1</sup>, the hook or lever *i* being actuated to move upward by the throw of the cam D; while at the same time the circular portion of the cam E, still in contact with the toe-piece *g*<sup>2</sup> of the block *g*<sup>2</sup> of the plate *g*, retains the same at its greatest distance from the center of the cam-shaft B and the presser-foot in the same upright position. The presser-foot having been raised the full throw of the cam D the toe-piece *g*<sup>2</sup> comes in contact with the flattened portion of the revolving cam E, and is drawn by the spring *j*<sup>2</sup> nearer the center of the shaft B, a distance gaged by the screw *j*, and its contact with the edge of the plate F. At this instant the lever *i* comes on the periphery of the shortest radius of the cam D, and the presser-foot actuated by the spring *j*<sup>2</sup> slides down, (guided by the slide-block *g*<sup>1</sup> in the inclined slot *f*<sub>1</sub>) and toward the operator, the length of the stitch gaged by the screw *j*, until it presses again the material on the finger-table, where it remains still, while the point of the needle ascends above the presser-foot. The cam E is then in position to move the toe-piece *g*<sup>2</sup> away from the center of the shaft B to the extreme end of the throw of the said cam. This movement oscillates the plate *g* on the center of the swiveled slide-block *g*<sup>1</sup> as fulcrum, thus moving the presser-foot G (still resting on the material) in a direction away from the operator. The serrated or roughened under side of the presser-foot impinges on and draws or feeds the material with it the desired length of the stitch, and again remains in position on the finger-table while the needle descends and completes the stitch thus gaged. From the foregoing it is seen that the foot G accomplishes the two purposes of presser-foot and feeder. *i*<sup>2</sup> is a lever secured to the shaft I, and from which a cord goes down to a treadle, by treading on which the presser G may be raised at will, leaving the free use of both hands for inserting, shifting, or removing the material on the finger-table.

K is the needle attached eccentrically to the needle-bar L by being clamped in a groove on

the said bar by a curved plate, *h*<sup>1</sup>, held by a set-screw, *h*<sup>2</sup>. The needle-bar L is mounted to turn in bearings V on a slide, M, worked in the slot *f*<sup>1</sup> in the head-plate F by a roller, *e*, studded on the side of the cam E.

This roller *e* works in a cam-groove, *e*<sup>1</sup>, in a plate, *e*<sup>2</sup>, secured to the slide M. The cam-groove *e*<sup>1</sup> is shaped, as seen in Fig. 7, of a nearly semicircular form coinciding nearly with the path of the roller *e* when in its lower sweep, so that when the needle is in its lowest position it will remain stationary for nearly half a turn of the cam E, or sufficiently long for the shuttle to make the one revolution necessary for forming the loop of the upper or needle thread around the lower or spool thread.

The needle-bar L is held in its proper position in the bearing V by means of a screw, *m*, passing through one of the bearings and entering a circumferential groove in the needle-bar. N is a lever, pivoted at one end to a bracket, *n*, attached to the head-plate F, and provided with a curved slot, *n*<sup>1</sup>, in which works a pin, *m*<sup>1</sup>, attached to the slide M. The other end of the slotted lever N has a wire loop, *n*<sup>2</sup>, to receive the thread. The upper thread runs from the spool O on the frame A to the wire loop *n*<sup>2</sup> and the tension *h*<sup>2</sup> on the stationary tension-plate E, thence to the wire loop *n*<sup>2</sup> on the lever N, a loop, *s*<sup>1</sup>, on the needle-bar crank, and to the eye of the needle. On the descending of the needle the pin *m*<sup>1</sup>, working in the slot *n*<sup>1</sup>, vibrates the lever N around its pivot, and, first slowly, then rapidly, lowers the wire loop *n*<sup>2</sup>, thereby producing the slack of the thread necessary for forming the loop around the shuttle to encircle the lower thread. P is the gage-wheel for changing the position of the needle, to produce zig-zag stitch. It consists of a small cylinder, bored through its length to fit and revolve on a stud, Q, screwed into the slide M. One end of this cylinder is flat and resting on the slide M, and across the other end are cut, at right angles to each other, two grooves, *p*<sup>1</sup>, thus leaving four projections, *p*<sup>2</sup>, alternating with the grooves *p*<sup>1</sup>. On the face or periphery of said cylinder are cut teeth to form a ratchet, *p*<sup>2</sup>. R is a pawl pivoted to the head-plate F at the side of the slide M, and provided with a cam-lever, *r*<sup>1</sup>, pivoted to the pawl E. This cam-lever *r*<sup>1</sup>, when set, as shown in Fig. 6, with the shortest radius of the cam turned toward the edge of the slide M, (indicated by the broken line,) allows the pawl R to drop into the teeth of the ratchet *p*<sup>2</sup>, which, on the ascending of the slide M, will be moved against, and revolved one-quarter of a turn by, the stationary pawl. When the cam-lever *r*<sup>1</sup> is set in the position shown in Fig. 1, with its longest radius toward the edge of the slide M, the pawl R is thrown out of contact with the ratchet, the position of the needle is not shifted, and the straight seam is produced.

S is a crank-arm fitted on the needle-bar L and held there by a set-screw, *s*<sup>2</sup>. To the

crank S is fastened a long crank-pin,  $s^3$ , to the end of which is fastened a coil-spring,  $s^4$ , the other end of which is secured to the slide M.

The position of the crank-pin is directly over the center of the gage-wheel P, and the spring  $s^4$  always holds the crank-pin  $s^3$  against the end of the wheel P either in one of the grooves  $p^1$ , as shown in Fig. 4, or on two opposite of the projections  $p^2$ , as in Fig. 5, according to the position of the wheel P; thus, when the pawl R is thrown in the teeth of the ratchet, oscillating the crank S for each upward stroke of the slide M a distance equal to the depths of the grooves  $p^1$  and alternating the position of the needle laterally a distance equal to the ratio of the eccentricity of the needle and that of the crank-pin relative to the center of the needle-bar L. The movement of the feed at the same time as the needle changes position produces the zigzag stitch. T is the finger-table on sewing-table previously mentioned, being a metallic tube closed at the top (except the opening for the needle) and flat, so as form a platform small enough to enter the little finger of a glove. This tube T has an opening at the front of the upper end for the insertion of the shuttle, after which the opening is closed by a lid, U, fastened by a screw,  $t^1$ , and further held in place by a spring,  $t^2$ , at the lower end of the tube, in such a manner that the lid may be opened by being slightly raised and then turned sidewise on the screw  $t^1$ , to give access to the shuttle.

The lid U is provided at the upper end with a small, thin projection,  $u'$ , which, when the lid is closed, projects slightly above the flat top or table of the tube T, directly in front of the needle, and serves to guide the seam, and also to divide the edges of the material in sewing a zigzag seam, as shown in Fig. 18. The tube T is inclined in line with the needle, and has a flange at its lower end by which it is screwed to the hollow or concave portion of the horizontal part of the frame A, as seen in the drawing, two parallel bars, V, extending from the flange through an opening in the frame and terminating with a cross-bar,  $v'$ , which serves as bearing for the shuttle-carrier. The shuttle-carrier W is a rod inclosed in the tube T, and provided at its lower end, below the frame A, with a spiral groove or thread,  $w$ , of a large pitch and of just one turn, a portion of the rod W above and below the groove  $w$  being cut down flat to the depth of the said groove, as shown at  $w^1$ , Fig. 1. The upper end of the rod W is provided with a head fitted to revolve in the upper end of the tube T. This head has a small projection,  $w^2$ , which enters and fits loosely in a notch,  $x$ , in the lower end of the shuttle X, so as to revolve the shuttle with the carrier W, and, without separating them out of working order, to allow the loop of the upper thread on being formed to pass through under the shuttle, between it and the head of the rod W. The shuttle-carrier is revolved by the rod O, oper-

ated by the crank-movement from the shaft B. For this purpose a round bar,  $\sigma$ , clamped to the end of the bent rod C, and is made flat on one side, is guided between one of the bars V and the rod W—the flat side against the bar V and the round side against the rod W. While the bar  $\sigma$  on its stroke slides on the flat portion  $w^1$  of the shuttle-carrier, no movement of the latter is produced, but when it enters and slides through the groove  $w$ , the shuttle is caused to make one revolution and revolve again once in the opposite direction on the return stroke of the bar  $\sigma$ .

The shuttle X is cylindrical and hollow, and a portion of its surface, at the lower end, is cut away to form a thin broad hook,  $x^1$ , for catching the thread off the needle and carrying it around with the revolution of the shuttle to form a loop around the lower thread issuing from the spool in the shuttle through the slot  $x^2$ , and twice again in and out through holes on the shuttle, as seen in the drawing in Figs. 9, 10, 12, 13, and 14. Y is the spool held on the stud in the shuttle by the small spring  $y^1$ .

The forming of the loop and making the stitch is very plainly exhibited in Figs. 12 to 18, Fig. 12 showing the needle-thread just caught by the hook  $x^1$ , the shuttle just started to revolve and form the loop; Fig. 13 showing the shuttle having completed its full turn and formed the loop ready to be drawn through between the shuttle and carrier-head by the upward movement of the needle; and Fig. 14 the loop of the needle-thread encircling the shuttle-thread, and nearly tightened by the further upward progress of the needle.

Z is the upper, and  $z'$  the under thread. A' is a plate hinged to a stud pivoted to the frame A, and which may be swung partly around, raised up, and placed on the finger-table, as shown in dotted lines in Fig. 1, when it is desired to sew flat pieces only.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The presser and feeder mechanism, consisting of the foot G and plate  $g$ , provided with the stationary block  $g^2$  and swiveled block  $g^1$ , the latter sliding in the inclined slot  $f$ , in combination with the cams D E on the shaft B, and the lifting hook or lever  $i$  on the shaft I, all constructed and operating substantially as specified.

2. The gage-wheel P, spring  $s^4$ , crank-pin  $s^3$ , and crank S, in combination with the needle-bar L, having the needle attached eccentrically, the slide M, and the stationary pawl and cam-lever R  $r^1$ , all constructed and operating substantially as specified.

The above specification of my invention signed by me this 6th day of November, 1876.

HANS PIETER HENRIKSEN.

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