

E. M. HENDRICKSON.

Sewing Machine.

No. 34,330.

Patented Feb. 4, 1862.

Fig. 1.

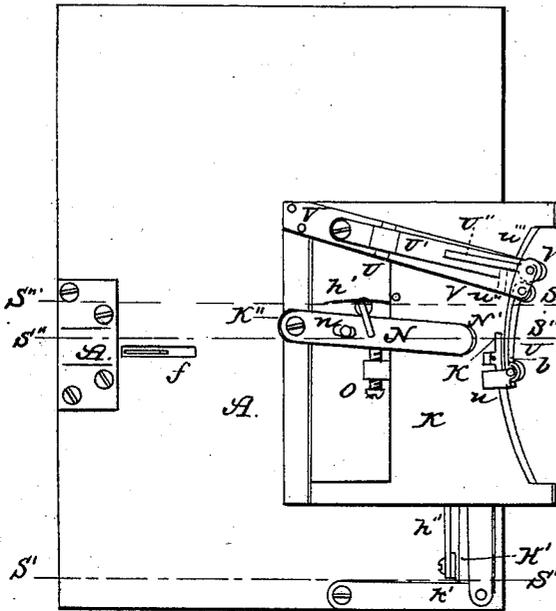


Fig. 3

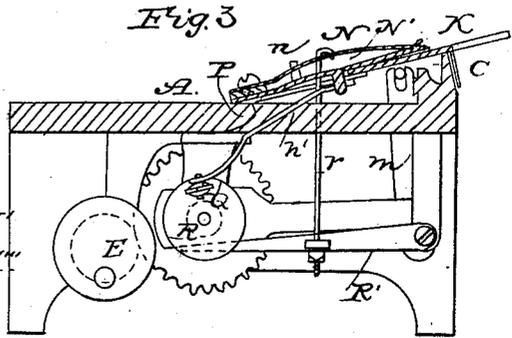


Fig. 4

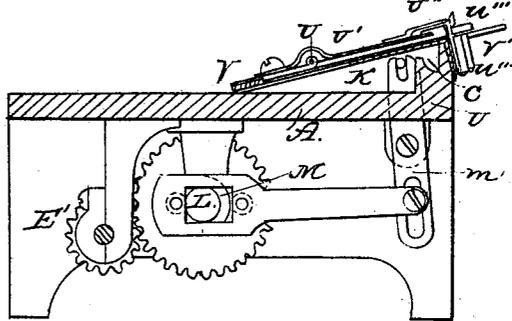


Fig. 2

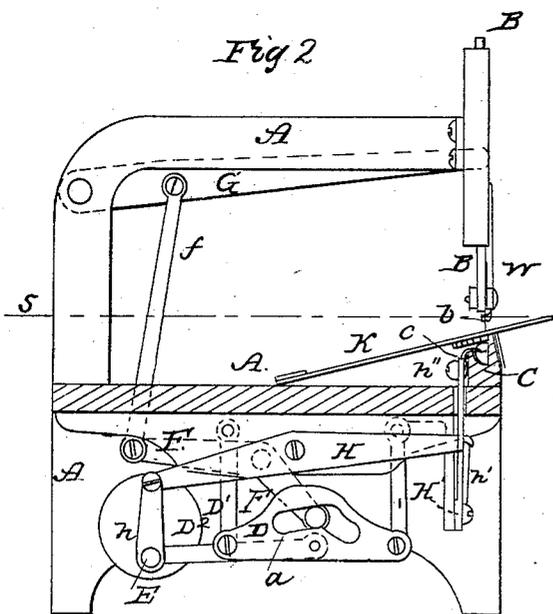


Fig. 5

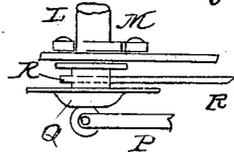


Fig. 6

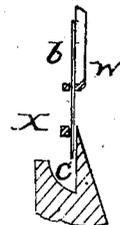


Fig. 7

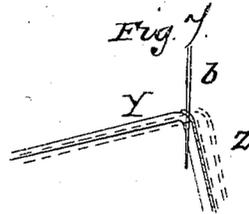
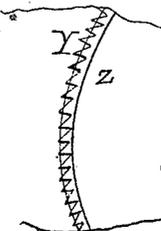


Fig. 8



WITNESSES  
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EZEKIEL M. HENDRICKSON, OF BROOKLYN, NEW YORK, ASSIGNOR TO HIMSELF, JAMES H. PRENTICE, AND JOB W. BLACKHAM, OF SAME PLACE.

## IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. 34,330, dated February 4, 1862.

*To all whom it may concern:*

Be it known that I, EZEKIEL M. HENDRICKSON, of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Sewing-Machines, by which they are better adapted for sewing in the linings of hats and for similar purposes; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings, in which—

Figure 1 is a horizontal section through the line S S in Fig. 2. Fig. 2 is a vertical section through the line S' S' in Fig. 1. Fig. 3 is a similar section through the line S'' S'' in Fig. 1. Fig. 4 is a similar section through the line S''' S''' in Fig. 1. Fig. 5 is a detached plan view of the cams for operating the double feed. Fig. 6 is a detached view (vertical section) of the needle and its two guides. Fig. 7 is a section of a portion of a hat, showing the action of the transverse feed; and Fig. 8 is a plan view of the stitching.

Similar letters of reference indicate like parts in all the figures.

The nature of my invention consists in the employment of a swinging or sliding frame or plate having a motion across that of the forward feed, in combination with a suitable clamp for compelling the fabric to reciprocate therewith, so as to bring the last stitch alternately to the right and left of the needle, and thereby to form stitches standing angularly to the line of the seam, as represented in Fig. 8.

The nature of my invention also consists in mounting a longitudinal feeding device upon the said reciprocating bed or plate and causing it to move therewith, whereby the action of the said cross-feed is prevented from exerting any sensible influence upon the proper action of the forward feed, even when they are both required to act at the same time.

The nature of my invention also consists in the employment of a clamp or presser foot so arranged in connection with the curved edge of the above-mentioned reciprocating bed or plate as to hold the junction of the rim and body of a hat with an adjustable force in the line of the stitches, and to yield to the varying thickness of the stuff in either the rim or the body, or both.

The nature of my invention also consists in the combination and arrangement of certain hinges and springs in connection with the said clamp or presser-foot, whereby the said clamp or presser-foot may be folded in such a manner as to disconnect it from the hat and allow the latter to be removed and another substituted, when the said clamp or presser-foot may be again folded back to its position for use.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation by the aid of the drawings, and of the letters of reference marked thereon.

A is the frame, B the needle-bar, *b* the needle, C the shuttle-race, and *c* the shuttle, of a sewing-machine, similarly constructed to those of ordinary shuttle-machines.

The manner in which I communicate motion to the needle and the shuttle is as follows: Beneath the frame A a piece, D, having a cam-shaped opening, *d*, is supported by two links, D', so that it is free to oscillate. Another link, D<sup>2</sup>, connects it to a crank, E, by which it receives a reciprocating motion. The cam-shaped opening *d* operates a roller upon the end of a crooked lever, F, which in turn operates the lever G, through the link *f*, and the lever G operates the needle-bar B. The opening *d* in D is so formed as to give the proper periods of rest and motion to the needle. The shuttle-carrier C' receives its motion from the same crank, E, through the short connection *h* at right angles to D<sup>2</sup>, the beam or lever H, link *h'*, bell-crank lever H', and link *h''*. By the arrangement of the links D<sup>2</sup> and *h* at right angles one to the other the needle and shuttle are caused alternately to cross each other's path, so as to interlock their respective threads in the usual manner.

Upon the frame A, I place another frame or plate, K, the front edge of which is curved to fit the exterior of a hat, and provided with an opening, *k*, for the needle *b*. This frame or plate K is supported at the proper angle to the needle *b* to allow the latter to pass through the hat, as shown in Fig. 7, and is so hung as to be capable of swinging or oscillating to a small extent on a fixed center, *k'*. This motion is obtained through the device represented in Fig. 4 and partially in Fig. 3.

L is a shaft having a speed of one-half that of the crank-shaft E', from which its motion is derived by means of gearing, as represented. On L is a cam, M, operating the lever *m*, which in its turn operates the plate K. By means of the slot in *m* and the adjusting of the pin therein the amount of motion given to K may be varied at will.

The longitudinal or direct feed is obtained as follows: Upon the frame K, at a point, *k'''*, are hinged two pieces or fingers, N N', Figs. 1 and 3, connected by a pin, *n*, or equivalent means, so that they are compelled to move together. Their own elasticity tends to keep them at a little distance apart, and a spring, *n'*, tends to keep them against the adjusting-screw O. A pin, *n'''*, connects them to a lever, P, which is operated by a cam, Q, on the shaft L, Figs. 3 and 5, and thus a reciprocating motion is communicated to N N'. Another cam, R, on the same shaft acts through the lever R' and link *r* to depress N upon N' just before the cam Q comes into play and release it just previous to the releasing of P by Q. The rim of a hat or other fabric being placed between the fingers N N', the cam R first causes it to be grasped by the said fingers, when the cam Q causes the said fingers, together with the fabric which is firmly held between them, to be advanced a distance the length of which is determined by the position of the screw O. The fingers then release their hold, and the spring *n'* returns them to their former position without disturbing the fabric. By reason of the fingers N N' being mounted upon K the movements of the latter do not affect the action of the former upon the fabric in any manner. The effect of these two feeds is to cause each alternate stitch to be taken in a different line from the others, as is clearly represented in Fig. 8, and as these two lines of stitches stand one on each side of the edge of the hat-binding the said edge is confined by every stitch, as shown in the said figure. Fig. 7 shows in red and black outline the positions of the hat relatively to the needle at the end of each movement of K. The cross-feed is here shown as working in a small arc, nearly equivalent to a straight line at right angles to the general line of the seam; but it is evident that by changing the motion of the cross-feed by causing it to turn on a different center the motion may be inclined forward or backward, if such motion be required.

U, Figs. 1 and 4, is a guide or novel presser-foot, curved to fit the form of the hat, and having a projection, *u*, to extend over the rim, so as to press the angle formed by the junction of the rim and body of the hat closely upon the corner or edge of K. This presser-foot U is hinged at *u''* to a stand, V, and is pressed in contact with the hat by a spring, *u'''*. The stand V is hinged at the point *v*, so as to allow it to be folded back out of the way, and is held down by the spring *v'*, which is so hung to V as to admit of its being turned on one side, out of the way to admit of V being folded.

A projection, *v''*, on *v'* presses against the spring *u'''* to bring the latter into action, and when *v'* is turned so as to allow V to be folded *u'''* is released, and U is at liberty also. Thus by simply turning *v'* to one side U may be turned outward and V upward and the hat is released. When another hat is substituted the stand V is again folded down, the foot U pressed into place, and the spring *v'* turned back by the operator, so as to confine both V and *u'''*. In this condition it will be seen that though the hat is forcibly confined to the plate K, yet the springs *v'* and *u'''* allow the presser-foot U to yield to any variations in the thickness of the hat or rim. A roller, V', on V serves also to confine the hat and compel it to move in the proper direction.

There is great liability of the needle springing to one side when forced through a heavy felt hat and the leather lining, particularly when it enters at an angle so oblique to the surface thereof. To avoid this springing and the consequent liability of breaking the needle or missing a stitch, I place a fixed guide, W, Figs. 2 and 6, having a small hole through which the needle passes, at such a distance above the surface as not to interfere with the feeding-motions, and yet near enough to support the needle near the point while passing through the work.

There are also frequently small knots or bunches in ordinary wool hats, which deflect the needle to a sufficient extent, notwithstanding the guide W, to prevent the proper interlocking of the threads, and to avoid such liability I place a second guide, X, Fig. 6, immediately below the fabric, and between it and the shuttle. This guide is slightly conical or countersunk, so as to catch the point of the needle, if deflected from its proper course, and guide it into position for the correct action of the shuttle thereon. I have found by experiment that these two guides are very important to the successful use of a machine in sewing so hard, smooth, and irregular material as hats and hat-linings.

In Figs. 7 and 8, Y is the hat, and Z the lining.

Having now fully described my machine, what I claim as my invention, and desire to secure by Letters Patent, is—

1. The transversely-reciprocating frame or plate K, in combination with a clamp or presser-foot carried thereon, and adapted to compel the fabric to reciprocate transversely therewith, and to allow it to be fed longitudinally through or upon the same, substantially as and for the purpose herein set forth.

2. Mounting the longitudinal feeding device N N', or its equivalent, on the cross-feed reciprocating plate K, so that each shall perform its proper function independently of the other, substantially as and for the purpose above described.

3. The clamp or presser-foot U *u*, so arranged in connection with the curved edge of the plate K as to hold the junction of the rim

and body of a hat with an adjustable force in the line of the stitches, and to yield to the varying thickness of the stuff, substantially as herein set forth.

4. The combination of the hinges *w''* and *v* and springs *w'''* and *v'* with the guide or presser-foot U for the purpose of allowing the said guide or presser-foot to be folded back out of the way when changing the hat, and be again

readily placed in position, substantially as herein described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

E. M. HENDRICKSON.

Witnesses:

THOMAS D. STETSON,  
G. H. BABCOCK.