R. Eickemeyer.

Sewing Machine.

No. 25078

Patented Aug. 9, 1859.

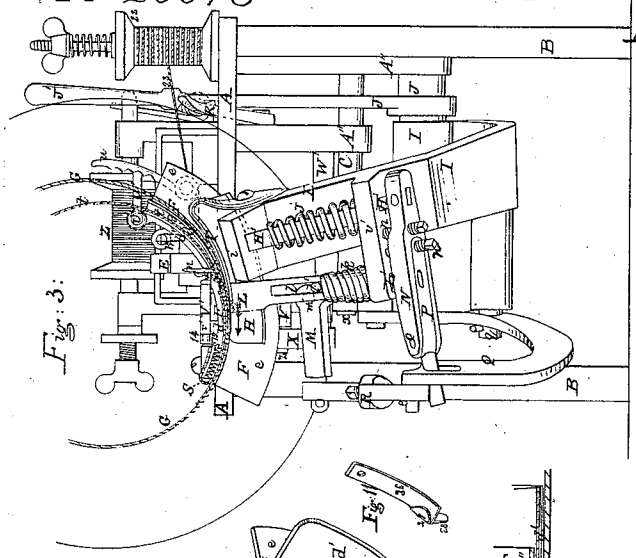

Fig. 3.

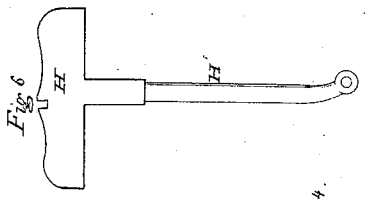

Fig. 6

Fig. 9

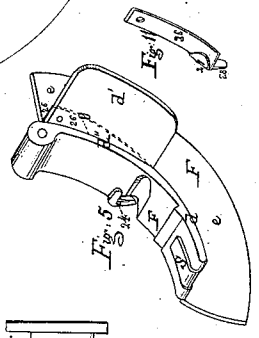

Fig. 5

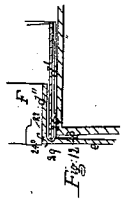

Fig. 11

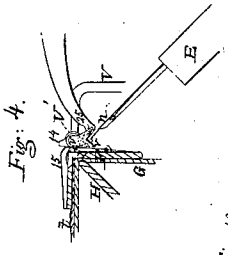

Fig. 4.

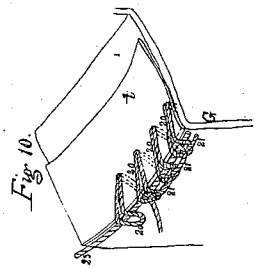

Fig. 10.

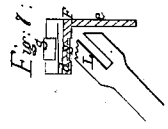

Fig. 7

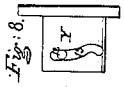

Fig. 8.

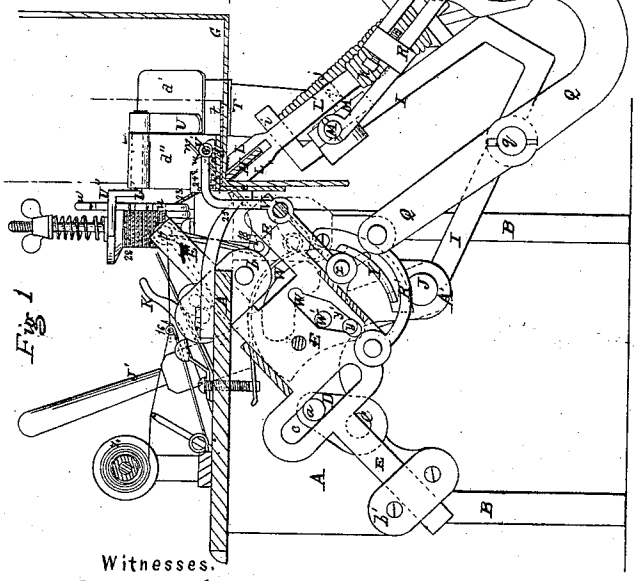

Fig. 1

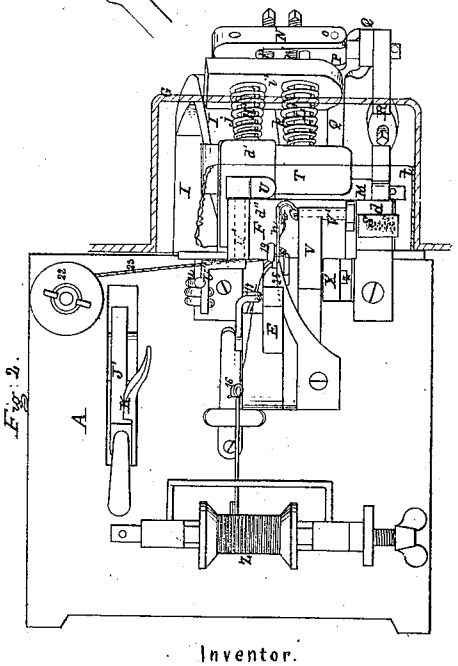

Fig. 2.

Witnesses:

Philip Burleigh Jones

R. S. Spencer

Inventor.

R. Eickemeyer

UNITED STATES PATENT OFFICE.

R. EICKEMEYER, OF YONKERS, NEW YORK, ASSIGNOR TO HIMSELF AND E. UNDERHILL, OF SAME PLACE.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. **25,078**, dated August 9, 1859.

To all whom it may concern:

Be it known that I, R. EICKEMEYER, of Yonkers, in the county of Westchester and State of New York, have invented a new and Improved Sewing-Machine for Sewing in the Linings of Hats, and for other purposes; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a vertical section of my machine. Fig. 2 is a plan of the same. Fig. 3 is an elevation of the same at right angles to Fig. 1. Fig. 4 exhibits a side view of the stitch-making devices and a section of the devices for holding the work. Figs. 5, 6, 7, 8, 9, 11, and 12 represent various details of the machine detached. Fig. 10 is a view of the stitch on an enlarged scale.

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

My invention consists in certain novel modes of applying, arranging, and combining devices which are common to other sewing-machines, and in certain novel contrivances employed in combination therewith, the whole combining to constitute a new kind of sewing-machine adapted for the sewing in the linings of hats around what is termed by hatters the "band"—that is to say, the angle formed at the junction of the brim with the part of the hat which fits to the head, such machine making a seam of a novel character.

To enable others to make and use my invention, I will proceed to describe its construction and operation.

A is a bed-plate intended to be supported upon a stand of any suitable character, but represented as supported upon short legs B B.

C is the main shaft of the machine, arranged horizontally in bearings in hangers A′ A″ under the bed-plate, and having rotary motion imparted to it to operate the machine by any suitable means. This shaft carries a crank, D, whose wrist *a* works in a slot, *c*, in the needle-bar E, Figs. 1 and 2, and so serves to give the necessary reciprocating motion to the said bar to operate the needle *n*. The said bar is arranged to slide at an angle of about forty-five degrees to the horizon in guides *b b′*, attached to the bed-plate and to the hanger A′, and the needle *n*, which is at the upper end of said bar with its point upward, is parallel with the said bar. All the other moving parts of the machine derive their motion from the needle-bar.

F is a plate, which is of rectangular form in its transverse section and curved longitudinally, secured in front of the bed-plate A, for the purpose of forming a resting-place for the hat during the operation of sewing in the lining. This plate is shown in perspective detached from the machine in Fig. 5, and is also shown in Figs. 1, 2, 3, and 4. The curved portion *d d′ d″* of the said plate, which enters the interior of the hat, has its profile arranged horizontally; but the flat portion *e*, against which the brim of the hat rests, occupies a vertical position, as shown in Figs. 1 and 4. The needle *n*, which has been before described as working at an angle of forty-five degrees to the horizon, has an opening, *f*, Figs. 2, 3, 4, and 5, provided for it across the angle of the said plate F, that it may pass through the hat, which is held closely up into the angle of the said plate F. On one side of the said opening *f* the curved portion of the plate F is single, and its under surface corresponds nearly with the curves of the interiors of the hats; but on the other side of the said opening the said curved portion is double, as shown at *d′ d″* in Fig. 3, and the lower piece, *d′*, which corresponds with the curve of the single portion *d*, projects forward beyond the rest of the plate. The interiors of the hats, one of which is shown in section in Figs. 1, 2, 3, and 4 in red color, (indicated by the letter G,) rests against the lower faces of the parts *d d′* of the said plate F, and the lining is introduced through the opening *g* that is left between the parts *d′ d″*.

H is a presser (shown in Figs. 1, 3, and 4 in the machine, and represented separataly in Fig. 6) for holding the angle of the band of the hat close into the angle of the plate F, so that the needle may pass through it, said presser being set at an angle of forty-five degrees to the two faces of the plate F, as shown in Figs. 1 and 4, and having its edge so formed with a notch, *h*, (see Fig. 6,) for the needle to pass through, as to press hardest upon the hat close to each side of the said notch. The stem H′ of the presser is fitted to work in two guides,

i i', in a strong frame, I, which is secured to a rock-shaft, J, which is fitted to fixed bearings in the hanger A', and a hanger, A'', below the bed-plate, and this rock-shaft is furnished with a lever, J', by which it and its attached frame I can be operated for the purpose of removing the presser H out of the way of the plate F, to permit the introduction of the hats to and their removal from the machine. The said lever is secured to hold the frame I in position to keep the presser in an operative position by means of a spring-catch, K, at the top of the machine. The lever J' is never disturbed but for the purpose of permitting the hats to be put in and taken out. The presser is forced up toward the angle of the plate F, to clamp the hat therein by means of a spiral spring, *j*, applied to its stem.

L is the feeding-dog, formed to fit into the angle of the part *d* of the plate F, and slotted or forked at its extremity, as shown in Fig. 1, for the presser to pass through it. This dog has only its upper surface roughened, that it may bite upon the body rather than the rim of the hat. The said dog has a stem, L', which passes through a hole provided for it in the guide *i'*, and has applied to it a strong spring, *k*, which tends to force the said dog up against the hat to make it bite thereon, and the said stem has formed in it a slot, *l*, to receive a pin, *l'*, on an elbow-lever, M, which works on a fulcrum, *m*, secured in the frame I, the said lever M serving to give the dog the necessary movement to feed the hat, and deriving the necessary motion for this purpose from a lever, Q, which works on a fulcrum, *q*, on one side of the frame I, the said lever Q being connected with the said lever M by means of a slotted link, R, and deriving the necessary motion from the needle-bar E by being connected therewith by a link, R'. The direction in which the dog feeds is indicated by an arrow in Fig. 3.

The dog L is forced up into contact with the hat preparatory to every feed movement and drawn back therefrom after it has produced such movement by means of a lever, P, which is connected with its stem L', the fulcrum of the said lever being the point of a screw, *n'*, which is screwed into the end of said lever, which rests against the bottom of the guide *i'* on the frame I, the said lever P being operated for this purpose by means of the aforesaid lever Q, with which it has a slot-connection at *r*. The presser H is drawn back to relieve the hat of its pressure at the time of the operation of the feeding-dog and permits the dog to have an unobstructed action by means of a lever, N, the fulcrum of which is the point of a screw, *p*, which is screwed through the said lever and which bears against the bottom of the guide *i'* on the frame I, the said lever N being connected with the lower extremity of the presser-stem, and being forked to embrace the lever P, and connected with the said lever by means of a pin, *o*. The said lever N is operated by means of the lever P, and by this mode of combining the presser and the dog the hat is relieved of the pressure of one as soon as, but not before, the pressure of the other is applied.

S, Figs. 2 and 3, is a metal slide fitted into a groove in the face of the part *d* of the plate F. The face of this slide is slightly recessed within the face of the said plate F, as shown in the transverse sectional view, Fig. 7, of the said plate, which is drawn on purpose to show this peculiarity. This slide covers the part of the plate F against which the feeding-dog acts, and when the hat is in its place with the lining *t* of leather or enameled cloth next the face *d*, the dog presses the said lining into the recess in the plate and into contact with the face of the slide and produces friction enough between the lining and the slide to move the latter along with the hat when the feed motion takes place, notwithstanding that there is a small spiral spring, *s*, applied to the said slide within the plate F, as shown in Fig. 3, where the plate is in section, for the purpose of pushing the plate in the opposite direction. This slide S obviates the great difficulty there would be in moving the lining along the face of the plate F if the dog pressed it directly against the said plate, owing to its tendency to adhere when pressure is applied. When the pressure of the dog ceases, the spiral spring *s*, above mentioned, carries back the slide S.

T is a light spring-plate for supporting the portion of the hat which is on its way to the needle, and for holding evenly up against the plate F the portion of the hat in front of the dog and presser.

U is a spring-presser for pressing on the lining *t* as it passes over the part *d'* of the plate before being laid against the interior of the hat, and producing a drag on the said lining at a distance from the edge which is to be sewed to the hat. Such a drag taking place while the feeding-dog acts near the edge which is to be sewed, tends to give the feed a slightly lateral action on the lining, and so tends to draw it toward the flat part *e* of the plate F and keep the edge always right on the edge of the band. The spring-presser U is attached to a small rock-shaft, U', fitted to a bearing in the plate F, and the said rock-shaft is furnished with a small lever, U'', by which the presser may be thrown up to a position to permit the introduction and removal of the hats to and from the machine. The lever is locked when the presser is down by means of a notched spring, *u*, applied to press against it.

In order that the edge of the lining *t* may come fully to the face of the brim of the hat, or slightly over the angle of the band, I fit to the bottom of the part *d'* of the plate F, close to the flat part *e* of the said plate, a thin plate of metal, 26, of which Fig. 11 is a perspective view, representing it detached from the machine, and of which an end view is given in Fig. 12, which exhibits a section of the plate F and adjacent parts in a similar plane to Fig. 4, but as they are seen looking in the opposite direction to that figure. The said plate 26 is provided at or near the end

next the needle, and on the side next the flat part *e* of the plate F, with an upper lip, 27, which is turned back in the manner shown in Figs. 11 and 12, and an under lip, 28, is bent downward at a right angle. The lip 27 and the terminal portion of the plate to which it is attached enter an opening, 29, formed to receive them in the part *d'* of the plate F, as shown in Fig. 12, and the lip 28, which is exceedingly thin, fits close against the flat portion *e* of the said plate. The interior of the bend of the upper lip, 27, is so formed relatively to the face of the lower lip, 28, against which the brim of the hat presses, as illustrated in Fig. 12, that the lining by the tendency to a lateral movement, which is produced by the spring-presser U being forced against the interior of the bend of the upper lip, is caused to come slightly over, or at least flush with, the face of the brim of the hat.

The needle *n* is of the usual eye-pointed kind, and forms the stitch with a single thread by the aid of a looper, *v w*, attached to a straight stem, *v'*, which is fitted to turn in a socket, V', in the extremity of a lever, V, which is fitted to oscillate on a pin, *x*, that is carried by a rocker, W, that is fast on a horizontal rock-shaft, W', the rock-shaft and pin *x* and the axis of the looper-stem being arranged perpendicular to the plane of motion of the needle. The rocker W derives motion from the needle-bar through the agency of a pin, *y*, in the rocker, and a slot, *y'*, in the needle-bar, and by such a motion is made to give motion to the looper-lever V, which is guided in such motion by having attached rigidly to one side of it a pin, *z*, which works in a slot in a stationary plate, X, secured under the bed-plate. The movement of the looper produced by the rocker W and lever V, under the direction of the slot, is almost in the form of a right angle, causing it to ascend behind the upright portion *e* of the plate F, and then to move forward horizontally, or nearly so, over the top of the said plate, and vice versa. In addition to this movement the looper has two other movements—viz., one produced by the lever V moving laterally or perpendicularly to the plane of the movement of the needle, and the other produced by the turning of its stem *v'* in the socket V' of the said lever. These movements are both derived indirectly from the first-described movement—viz., the lateral movement by a pin, 12, on the looper-lever V, working in a slot, 13, in a plate, Y, (a front view of which, detached from the machine, is given in Fig. 8,) secured to the side of the hanger A', and the turning movement through the agency of a screw, 14, which is attached rigidly to the stem *v'*, and works on a guiding-track, 15, provided for it on the back and top of the plate F.

The looper, of which, with its stem and shoe attached, a perspective view is given in Fig. 9, is of a hooked and forked form, its hook having two prongs, of which the one, *v*, catches the needle-thread and forms and extends the loop, and the other, *w*, serves as a stop to the loop and also as a guide to the needle during one portion of the operation of the latter. The thread, which is represented in blue color, is supplied to the needle from a spool, Z, arranged above the bed-plate A and controlled by an ordinary friction apparatus, and from the said spool the thread passes through an elastic guide, 16, through two fixed eyes, 17 and 18, to and through a guide, 19, at the end of the needle-bar, and thence through the eye of the needle.

The operation of the looper, in combination with the needle and thread to effect the sewing, is as follows: When the needle has completed its upward movement through the notch or opening *f* in the plate F and through the margin of the inside of the hat and through the lining, the looper is in its most forward position, its shoe resting on the top of the plate F, and its prong *v* is in a nearly horizontal position and its prong *w* turned somewhat upward, as shown in Figs. 1, 2, and 3, which represent the needle as just commencing to be drawn back. As the needle is drawn back and the thread that has been carried with it through the cloth is thereby slackened to commence the formation of the loop, the lever N begins to draw the looper directly backward, so that the prong *v* passes close to the needle and between the latter and the thread and catches the slack thread, which it retains in the form of a loop after the needle has been withdrawn from the cloth. After the point of the needle leaves the cloth the looper, which has continued moving back up to this point in the needle's motion, commences descending behind the plate F, and turning in the socket V', and so draws the loop from the interior of the hat down over the edge of the lining *t*. As the looper descends its movement laterally to the plane of the needle's motion takes place in the opposite direction to the feed movement of the cloth, and so draws the loop into an oblique position, as shown in Fig. 10, which represents the seam as it appears inside the hat, the exposed portions being shown in unbroken lines, and the portions which are in the fabric being represented dotted. The feed motion of the hat and lining takes place just as the downward movement of the looper is completed, to present the proper place opposite to the needle for the next perforation. The looper by the lateral movement just described has the hollow of its hook carried over the stationary guide 25, which is arranged directly above and close to the needle, and this guide prevents it moving laterally back again, and holds it steady with the loop upon it in such a position that the needle will pass through it when it moves upward again into and through the fabric, and it is in this movement of the needle that the prong *w* of the looper performs its duty—viz., that of guiding the needle with certainty into the last loop, while the looper holds the said loop steady by the aid of the guide 25. As the needle moves up again through the fabric the looper rises again to the

top of the plate F, and advances again to be in readiness to take a new loop from the needle, moving laterally over the needle as it does so, that its prong *v* may be on the proper side of the needle to take the loop. This operation being repeated forms the kind of seam represented in Fig. 10—that is to say, each of the loops 20 20 is passed through and across the angles of the band of the hat and through the lining to the interior of the hat, then being drawn back again in an oblique direction over the edge of the lining and over the angle of the band, and the succeeding one passing through it before passing into and through the fabric, and being drawn back in a similar manner.

Instead of the parts of the machine being arranged for the needle to enter on the face of the brim and bring the loop through from the interior, and thence over the angle of the hat, they may be arranged for the needle to enter at the inside of the hat and bring the loops out on the face of the brim, or outside of the edge of the lining *t*, thus making a similar stitch, but bringing the single portions 21 21 of the thread, which connect the loops along the inner margin of the seam inside of the hat, instead of along the edge of the lining, against the face of the brim.

To give a finished appearance to the hat along the junction of the edge of the lining with the hat, I lay in the seam, along the said junction, a cord, 23. This cord, which is tinted yellow in the drawings, is supplied from a spool, 22, arranged on the bed-plate A, being conducted therefrom behind the plate F and through an eye, 24, in the said plate to the inner angle thereof, where it crosses the opening *f*, so as to be caught and secured by the stitches as the latter are made.

Having thus described my invention, I will proceed to point out what I claim as new and desire to secure by Letters Patent—

1. The combination of the angular supporting-plate F with a needle applied and arranged to work through an opening in the angle of the said plate and obliquely to both faces of the said plate, substantially as described, for the purpose of sewing obliquely through any substance supported in the angle of said plate.

2. The combination of the angular supporting-plate, the obliquely-arranged needle, and a looper applied and operating so as in its movements to follow the angle of the said plate, substantially as herein described.

3. The combination of the looper *v w*, constructed with a two-pronged hook, and having a triple movement, as described, with a stationary guide, 25, applied and arranged relatively to the needle and the angular supporting-plate, substantially as herein described.

4. The arrangement of the feeding-dog and presser in a swinging frame, I, so applied in combination with the angular supporting-plate as to provide for the introduction and removal of the hats to and from the machine, substantially as herein described.

5. Though I do not claim, broadly, the use of a sliding plate fitted to the bed or work plate of a sewing-machine opposite to the feeding-dog, yet I claim the slide fitted, as described, to the angular plate F opposite the feeding-dog, with its face recessed behind the general surface of the plate, as shown in Fig. 7, and having applied to it a spring, *s*, by which it is operated, as described, in combination with the feeding-dog, for the purpose herein set forth.

6. The plate 26, with its lips 27 28, applied substantially as described, in combination with the plate F.

R. EICKEMEYER.

Witnesses:
R. S. SPENCER,
PHILIP BORLEAU JONES.