

W. H. CATELY.
Needle Feed Sewing Machine.

No. 56,902.

Patented Aug. 7, 1866.

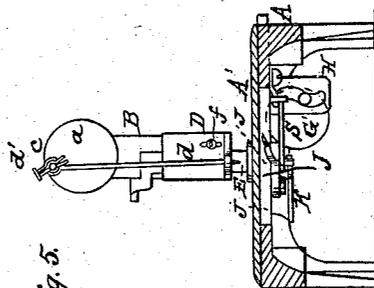
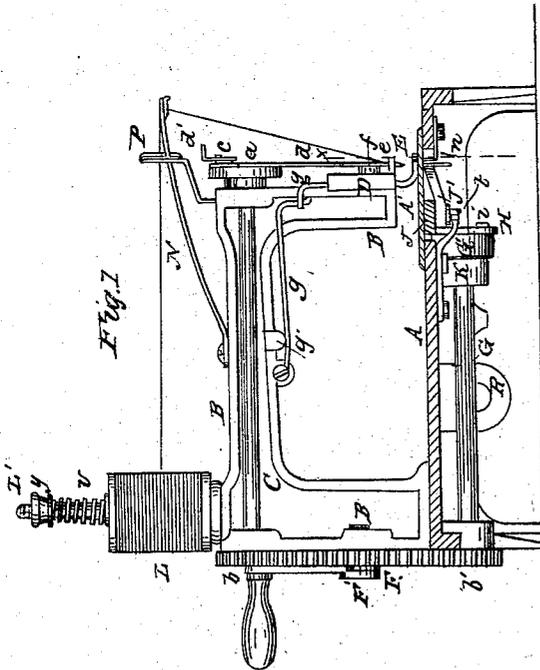
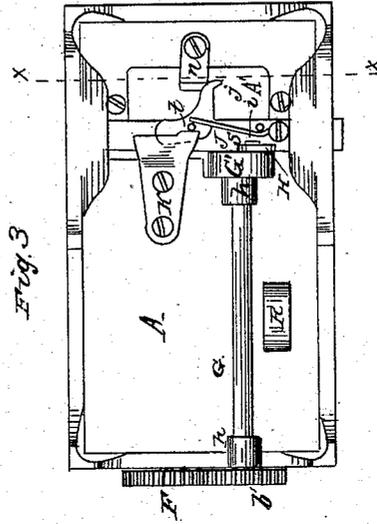
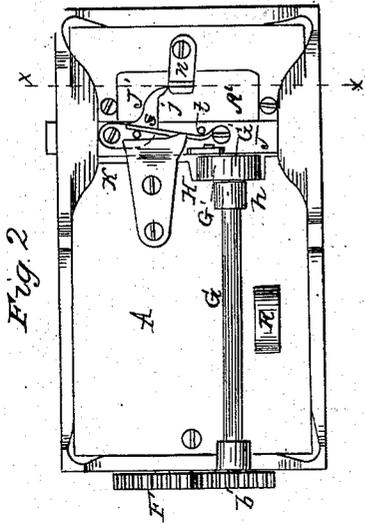


Fig. 5.

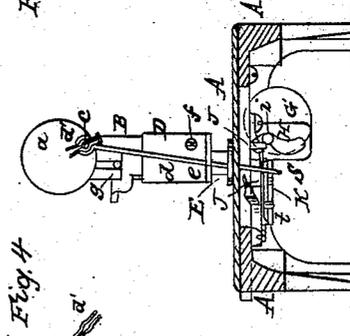


Fig. 4.

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IMPROVEMENT IN NEEDLE-FEED SEWING-MACHINES.

Specification forming part of Letters Patent No. 56,902, dated August 7, 1866.

To all whom it may concern:

Be it known that I, WILLIAM H. CATELY, of the city and county of New York, and State of New York, have invented certain new and useful Improvements in Sewing-Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is an elevation of one side of the upper part of the machine and a vertical longitudinal section through the lower part thereof. Fig. 2 is a bottom view of the machine. Fig. 3 is a bottom view, showing the looper in a position for drawing the stitch tight. Figs. 4 and 5 are transverse sections through the table, taken in the vertical plane indicated by red line *x x* in Figs. 1, 2, and 3.

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

This invention relates to certain novel improvements in sewing-machines in which the work is fed along by means of a vibrating needle and the stitches formed by a reciprocating looper, my object being to so combine and arrange the several parts that very few parts are required, thus enabling me to construct the machines and sell them at a comparatively small cost, as will be hereinafter described.

To enable others skilled in the art to understand my invention, I will describe its construction and operation.

In the accompanying drawings, A represents the table or bed-plate, upon one end of which an overhanging bracket, B, is suitably secured. This bracket is adapted to serve as end bearings for a shaft, C, which is arranged parallel to the surface of the table and which carries on its forward end a crank-wheel, *a*, and on its rear end a pinion spur-wheel, *b*.

Bracket B is constructed with one side flat and the other side flanged, so as to form a receptacle for the shaft C, and also to afford means for getting at the bearings in this bracket to oil and clean them. By thus constructing the bracket it will be very light and strong, and present the appearance of being solid when seen from the front side of the machine.

A pin, *c*, projects from the front face of the

wheel *a*, and receives upon it a loop formed on the end of the needle *d*, and also a spring-fork, *d'*, which latter embraces notches formed in said pin and prevents the needle from slipping from it.

The needle *d* is a straight piece of steel having its upper end bent in the form of an eye, by which the needle is pivoted to the crank-pin *c*, as above mentioned. The needle tapers toward its lower end, and is pointed and perforated, as shown in the drawings. The lower end of the needle *d* passes freely through a projection, *e*, which is formed on the face of an adjustable guide, D, and is caused to vibrate by this means when the shaft C is revolved.

The plate D is secured to the face of the pendent portion of the bracket by means of a set-screw, *f*, which passes through an oblong slot in said plate and is tapped into the bracket. By loosening the screw *f* the plate D can be adjusted up or down, and the length of feed thereby regulated. The perforated projection *e*, through which the lower end of the needle passes, serves as the fulcrum for this needle, and by adjusting this fulcrum nearer to the bed-plate A the length of the stitches can be shortened. This projection *e* causes the needle to vibrate and to feed the work along. The plate D also serves as a guide and holder for the spring pressure-foot E, the shank of which is confined in a slot in said plate and acted upon by means of a spring, *g*, the forward end of which projects through a vertical slot which is made through the face of the bracket B, and presses upon the upper end of the pressure-foot shank. The rear end of the spring *g* is secured to the lower flange of the horizontal portion of the bracket, and held down by a lug, *g'*, as shown in Fig. 1.

The pressure-foot is of an elliptical form, and it has an oblong slot through it, which is arranged directly over a corresponding slot through the plate A' and in the vertical plane of the needle *d*, so that this needle shall be allowed to vibrate freely as it is moved up and down. The upper end of the shank of the pressure-foot has an offset formed on it, that serves as a thumb-piece by which to lift the foot in applying work upon or removing work from the table.

The pinion spur-wheel *b*, which is keyed on the rear end of the shaft *C*, engages with the teeth of a large spur-wheel, *F*, that has its bearing upon a short shaft, *F'*, and receives motion from this wheel. Below the wheel *F*, and in front of a vertical plane passing through the axis of the wheels *b* and *F*, is a longitudinal shaft, *G*, carrying on its rear end a pinion spur-wheel, *b'*, and having its bearings in projections *h h*, which are cast on the bottom side of the table *A*, as shown in Figs. 1, 2, and 3.

The forward end of the shaft *G* carries a crank-wheel, *G'*, having a pin, *i*, projecting from its front face, as shown in Figs. 1, 4, and 5. The pin *i* enters a serpentine slot, which is made through a plate, *H*, that projects down perpendicularly from a transverse reciprocating bar, *J*, that carries the looper *J'*. This looper-bar *J* works in grooves which are made in the upper surface of the table, and it is held down in place by means of the plate *A'*, upon which the work is laid. The back face of the slotted projection *H* touches the front face of the crank-wheel *G'*, and the bar *J* is thereby prevented from having any vibrating or rocking motion when it wears a little in its slots.

The looper *J'* is curved, as shown in Figs. 1, 2, and 4, and it is constructed with a tapering point, *j*, on its free end, for taking the loops from the needle and drawing the stitches tight in the cloth. This looper is pivoted to the bar *J*, and it receives its vibrating movement from a fixed cam-plate, *K*, and a spring, *s*, which latter acts upon a stud, *t*, projecting from the looper, and presses this stud against the edge of the cam-plate *K*, as shown in Figs. 2 and 3. The spring *s* is secured to and moved with the looper-bar *J*.

In front of the lower end of the needle *d*, and secured to the bottom of the bed-plate *A*, is a guide or support, *n*, which is formed of one piece of metal, bent as shown in Fig. 1, and located in such relation to the needle that it will prevent this needle from being bent, and also keep the needle in a position to allow the looper to take the loop from the needle.

The spool *L* is applied to a vertical stud, *L'*, which is secured to the rear portion of the bracket *B*, and this spool is acted upon by an adjusting-screw, *y*, and a spring, *v*, which latter produces the required friction on the spool. The thread is carried from the spool through a fixed eye projecting from the bracket *B*, and also through an eye that is formed on the forward end of an overhanging spring, *N*,

as shown in Fig. 1. The spring *N* is secured to the top of the bracket, and is guided by a loop, *P*, so as to allow its free end to vibrate freely and to keep the thread under constant tension. From the eye of the spring *N* the thread is carried down and passed through the eye of the needle.

As the needle passes down through the cloth its point is moved slightly backward, so as to move the cloth the distance of the length of one stitch, and as the needle rises and forms a loop the point *J* enters the loop and draws the stitch tight. The looper then recedes during the descent of the needle. After the looper takes the loop and the point of the needle leaves the cloth, the cam-plate *K* moves the point *j* outward, and thus tightens the stitch.

In front of the shaft *G* and in rear of the crank-wheel *G'* a lug, *R*, is cast on the bottom of the bed-plate, which lug is perforated to receive the end of a clamp by which the machine is secured to a table or any other fixed object.

I contemplate making these machines very small and portable, and for this purpose I do not use a stand and treadle, but apply a hand-crank to the driving-wheel *F*, and operate the machine by hand.

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

1. The combination of the mechanism for operating the needle and varying the extent of the feed with the mechanism for operating the looper, the same being constructed, arranged, and operated substantially as described.

2. The arrangement of the looper-slide *J* so as to be operated directly by the crank-pin of the shaft *G*, in combination with the arrangement of the needle so as to be operated directly by the crank-pin of the shaft *C*, substantially as described.

3. The construction and arrangement of the plate *K*, looper *J'*, and spring *s*, in combination with a needle which is hung upon a crank-pin, substantially as described.

Witness my hand in the matter of my application for a patent on a sewing-machine this 11th day of May, 1866.

WILLIAM H. CATELY.

Witnesses:

G. THISTLETON,
HENRY BEARD.