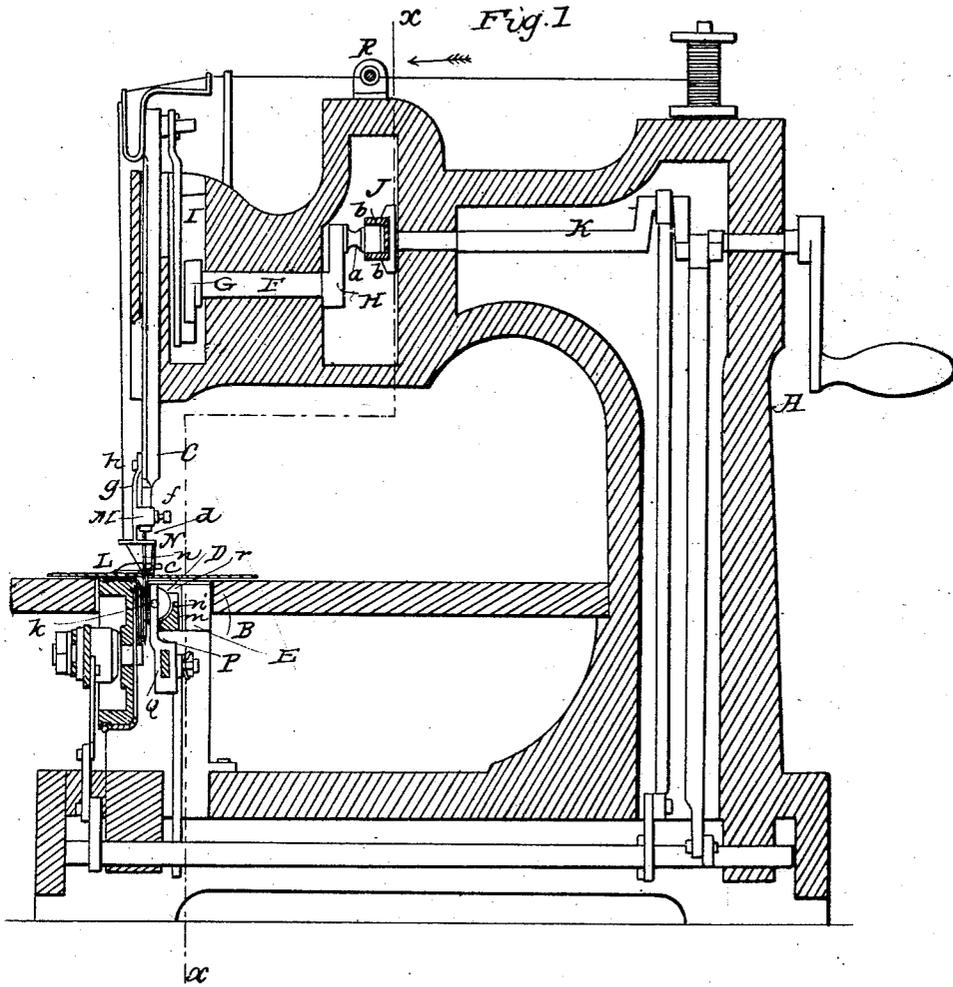


G. JUENGST.  
Sewing Machine.

2 Sheets—Sheet 1.

No. 27,132.

Patented Feb. 14, 1860.



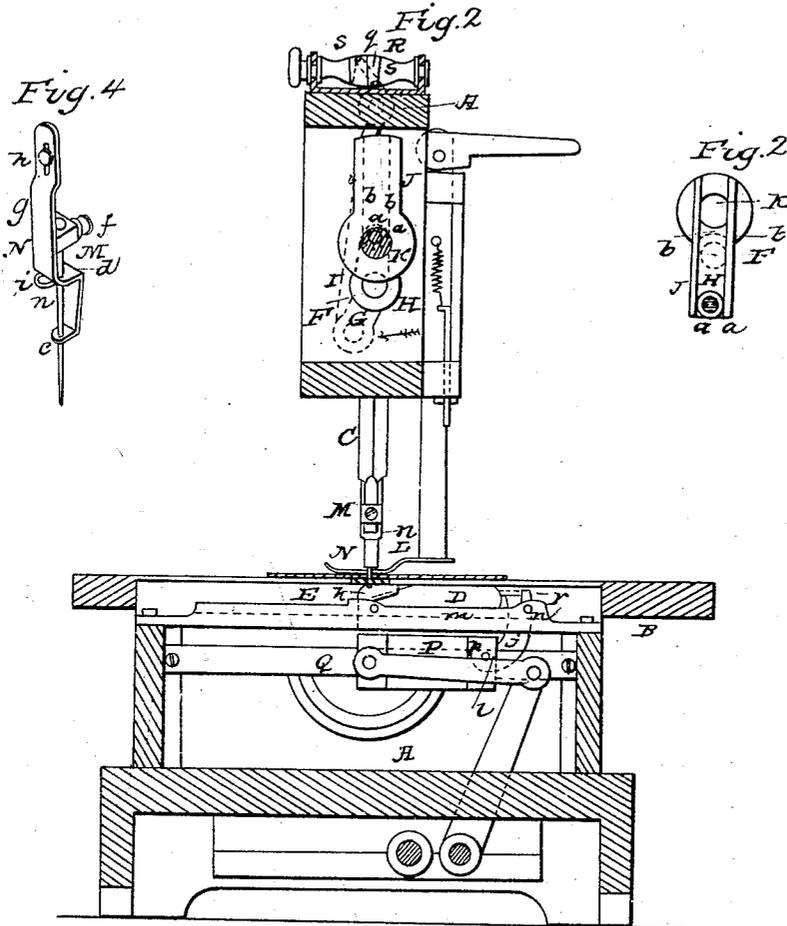
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G. JUENGST.  
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# UNITED STATES PATENT OFFICE.

GEORGE JUENGST, OF NEW YORK, N. Y.

## IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. 27,132, dated February 14, 1860.

*To all whom it may concern:*

Be it known that I, GEORGE JUENGST, of the city, county, 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 of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a vertical section of a machine with my improvements, taken in a plane parallel with and close to the driving-shafts. Fig. 2 is a vertical section taken at right angles to Fig. 1, in the planes indicated by the line  $x x$  in that figure, looking in the direction of the arrow shown near that line. Fig. 3 is a front view of part of the needle-driving mechanism. Fig. 4 is a perspective view of the needle-supporter.

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

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

A B is the frame of the machine, made substantially of the usual form.

C is the needle-bar, carrying the needle  $n$  and fitted to slide in a suitable guide or guides perpendicular to the table B.

D is the shuttle, operating below the table in a straight raceway, E, in the common way.

F is what I call the "needle-operating shaft," arranged horizontally or perpendicularly to the lines of movement of the needle, in a suitable bearing or bearings in the upper part of the frame, and having secured to it two cranks, G and H, one at each end. The crank G, which is at the front end, is connected by a rod, I, with the needle-bar C, and is set at an angle of about from one hundred and fifty-five degrees to one hundred and sixty degrees to the other one, H, so that it may, in its revolution, the direction of which is indicated by an arrow in Fig. 2, arrive in a vertical position below the shaft before H arrives in a vertical position above it. The wrist  $a$  of the crank H is furnished with an anti-friction roller,  $a'$ , to work in a slot or groove,  $b b'$ , in a longer arm, J, on the main shaft K of the machine, which is arranged parallel with the needle-operating shaft F in suitable bearings in the upper part of the frame, but at a distance higher not quite equal to the distance from the axis of the shaft I to the

axis of the wrist  $a$ . The arm J, having, along with the main shaft  $i$ , imparted to it a rotary motion in the direction of the arrow shown in Fig. 2, drives the crank H, shaft I, and crank G in the corresponding direction, and so the last-mentioned crank is caused to give the needle an upward and downward movement; but, owing to the relative arrangement of the two shafts, the wrist  $a$  of the crank H is caused, during its rotation with the arm J, to approach and recede from the center of the said arm J during each revolution; and hence it is obvious that if the velocity of rotation of J be uniform that of H will be variable. Now, the approach of the said wrist  $a$  to the center of said arm J is so near that the movement of the crank H almost ceases for a short time—that is to say, while the arm J is passing the upper vertical position, (shown in black outline in Fig. 1,) and about five-sixths of each revolution of H is made during the lower half of each revolution of J, and, by the relative arrangement of the cranks G and H, as described, the latter arrives at that point where its revolution is the slowest, (illustrated in Fig. 2,) just after the former passes its lowest position. The arm J will work equally well without a groove, and with only a simple straight arm for the roller  $a'$  to work against, for only one side of the groove  $b$  ever bears against the said roller.

The effect produced by the above-described system or arrangement of shafts and cranks, when it operates in combination with a shuttle motion properly timed in relation to it, is that the needle, after making its descent into and through the cloth, very quickly, though with a gradually-diminishing velocity, rises a short distance to commence the formation of the loop, and gradually becomes almost stationary, while the shuttle passes into the loop, and afterward continues its upward movement with a gradually-accelerated velocity, to draw up the loop and complete the stitch. By the retardation of the movement of the needle in this manner during the first part of its ascending movement everything is done that can be accomplished by the total suspension of its motion after a portion of its ascent has been made, as heretofore produced by a cam—viz., the formation of the loop and the gain of time for the passage of the shuttle—while the mechanism which I employ to produce such retardation works easier and with less noise than a

cam, and is in other respects less objectionable.

N is the needle-supporter for giving support to the needle *n* below the needle-bar. This supporter N is made in a piece with or attached permanently to the needle-clamp M. It consists of a stiff piece of steel extended below the needle, and so bent back therefrom, as shown at *c d* in Fig. 1, as not to interfere with the pressure-pad L during the operation of the needle-bar, or the raising and lowering of the said pad; and in the parts *c* and *d* eyes are provided for the needle to pass through, the eye in the bottom part, *c*, being only just large enough to admit the needle, and therefore preventing any lateral springing or bending of the part of the needle between it and the clamp M. The support thus given to the needle is of great importance, more especially when the needle, is very fine, and in a great degree obviates the bending and breakage of of the needle which is so common when the needle has no support below the needle-bar, clamp, or holder, which must always be allowed a considerable clearance above the cloth to permit it to clear the pressure-pad when the latter is lifted from the cloth.

To obtain the full advantage that is to be derived from such a supporter, it must be made adjustable, so that it may, whatever the thickness of the cloth or material being sewed, only just clear the surface of such material in its descent, and such thickness may vary from that of the thinnest fabric to that of nearly a quarter of an inch; and to provide for this adjustment I fit the needle-clamp M to slide up and down on the exterior of the lower part of the needle-bar.

To insure greater steadiness of the needle-supporter K than the simple needle-clamp M and its set-screw *f* are capable of giving, I provide the clamp with an upwardly-extended stay-piece, *g*, which is slotted to receive a set-screw, *h*, which secures it to the needle-bar some distance up. The said needle-supporter has attached to it the lower thread-guide, *i*.

P is the shuttle-driver, fitted to slide on a stationary guide-bar, Q, and provided with two horns, *j* and *k*, like those in common use; but instead of both horns being rigidly attached to the driver in the common way, the horn *j*, which acts upon the heel of the shuttle, is jointed by a pin or hinge-joint, *l*, as shown in Fig. 1, and has a spring, *p*, applied to it in such a manner as to tend to press it away from the other horn, *k*; but to prevent it ever being pushed farther from *k* than is necessary to allow plenty of room between them for the shuttle to enter the loops and for the loops to slip off it, the said horn *j* is provided on one side with a projecting ear, *r*, which rests upon the top of a ledge, *m n' o*, provided for it at the back of the shuttle-race, said ledge having its greatest portion *m* perfectly straight and par-

allel with the bottom of the shuttle-race and with the guide-bar Q, but having the two inclined planes *n'* and *o* so arranged that the ear *r* will pass up one of them as the shuttle approaches the end of its stroke in either direction, and so cause the horn *j* to be forced toward that *k* as the shuttle arrives at the end of its stroke, so that when the movement is changed there is no play of the shuttle between the horns. The spring *p* pushes the horn *j* back from *k*, as the said horn *j* descends either inclined plane in commencing the return-stroke, and holds it back till the stroke is nearly completed, and so leaves plenty of room between the said horns for the entry of the shuttle into the loop, and the passage of the loop over the shuttle.

I have not described the mechanism for giving motion to the shuttle-driver, as I do not lay any claim to that mechanism.

R is the device for producing friction on the needle-thread, consisting of a spindle attached to the top of the frame of the machine in such a manner as to be capable of being turned on its axis, and having an eye, *q*, through which the thread is passed for the purpose of winding it in opposite directions upon the spindle.

As far as I have now described the device, I have shown no difference between it and devices heretofore in common use; but I will now proceed to explain my improvement.

The spindle heretofore used is commonly cylindrical, and the eye is directly transverse; but my spindle (represented in Fig. 2 of the drawings) is made with its operative portion of the form of two frustums of cones, *s s*, united at their bases, and the eye *q* passes in a direction oblique to the axis of the spindle and crosses the junction of the two cones *s s*, so that one of its orifices is in one cone and the other orifice in the other cone. By this form of the spindle and arrangement of the eye the thread winding on the spindle from one orifice is kept clear of that winding on from the other orifice, and the coils are prevented riding over each other and preventing the regular delivery of the thread.

Having thus described my several improvements, I will proceed to state what I claim as new and desire to secure by Letters Patent—

1. The combination of the rotating shafts F K, one of them carrying a revolving arm, J, and the other two revolving cranks, G H, when the said shafts, arm, and cranks are arranged and operate as herein shown and described.

2. The shuttle-driver, with its jointed horn *j*, ear *r*, and spring *p*, applied and operating in combination with the guide *m n' o* on one side of the shuttle-race, and operating substantially as herein described.

GEORGE JUENGST.

Witnesses:

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