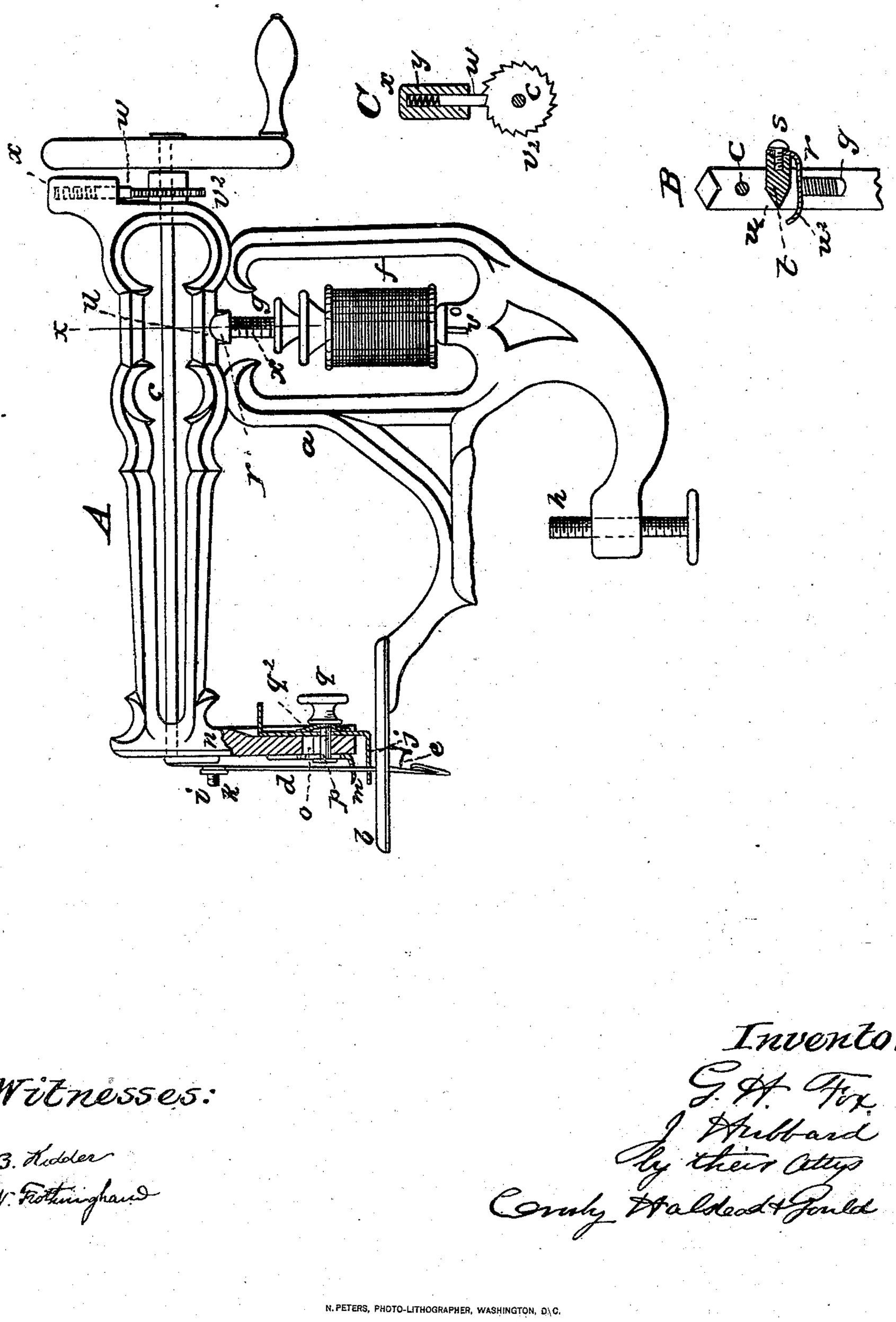
FOX & HUBBARD.

Sewing Machine.

No. 80,861. Patented Aug. 11, 1868.



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United States Patent Office.

GEORGE H. FOX AND JOSEPH HUBBARD, OF BOSTON, MASSACHUSETTS.

Letters Patent No. 80,861, *dated August* 11, 1868.

IMPROVEMENT IN SEWING-MACHINE.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that we, GEORGE H. FOX and JOSEPH HUBBARD, both of Boston, in the county of Suffolk, and State of Massachusetts, have invented certain new and useful Improvements in Sewing-Machines; and we do hereby declare that the following, taken in connection with the drawings which accompany and form part of this specification, is a description of our invention sufficient to enable those skilled in the art to practise it.

The invention relates to details of construction of that class of single-thread or tambour-stitch sewing-machines, in each of which a stationary looper or looping-finger is used in connection with a hook or crochet-needle, and in which the needle is the feeding-instrument, the needle being the only device in the stitch-forming mechanism that has positive movement, said needle having a round eye at its top, through which a crank-pin on the driving-shaft extends, rotation of the crank imparting an up-and-down movement and a vibrating or laterally-reciprocating movement to the needle, to form the successive stitches, and feed the work.

A machine having these general characteristics is illustrated and described in United States patent, No. 67,535, and the accompanying drawing shows at A an elevation of a similar machine embodying our improvements.

Our improvements, which relate wholly to specific details of construction, consist in the arrangement of a screw and nut, so disposed as to clamp both the needle-guide and the stripper-plate, and in combining therewith a spring, so disposed as to prevent slipping of either the guide or stripper when the screw is loosened.

Also, in a peculiar or peculiarly-arranged spring for holding the spool-spindle.

Also, in the construction and method of applying a click or detaining-pawl, to prevent back motion of the driving-shaft.

a denotes the frame of the machine.

b, the work-supporting plate.

c, the driving-shaft.

d, the needle.

e, the thread-guide.

f, the spool.

g, the spool-spindle.

h, a clamp-screw, by means of which the machine is secured to the edge of a table.

The front end of the driving-shaft is bent to form a crank-arm, *i*, the end of which slips loosely through an eye made at the head of the needle, the end of the crank-arm being screw-threaded, and provided with a nut, *k*, for confining the needle *d* upon the crank.

The top of the needle being thus hung and supported, and being by motion of the shaft driven rotatively, the bottom of the needle extends through a guide-hole in a stationary plate, *m*, fastened to the head *n*. As the top of the needle, in working up and down, also works to and fro (laterally,) its lower end vibrates against the plate *m* as a fulcrum, and these vibrating movements impart the feed or progressive movements to the cloth, the needle entering the cloth at an angle, and the lower end moving forward and carrying the cloth as the needle ascends.

As the amount of lateral movement of the lower end of the needle is dependent upon the position of the fulcrum and guide-plate *m*, such plate is made adjustable in height to change the length of the stitch, to effect which it is made with a long slot, *o*, through which and the head a screw, *p*, passes, a nut, *q*, on the screw serving to clamp the plate to the head. By raising or lowering the plate, and fastening it in position, the length of stitch may be regulated as desired.

Beneath the fulcrum-plate *m* is an adjustable stripper-plate, *j*, which strips the cloth from the needle as the needle rises, and this plate is confined to the head by the same screw and nut that confine the fulcrum and guide-plate, (as seen at A, where the head is shown in section,) this arrangement enabling the adjusting and clamping-screw to pass entirely through the head, (the head of the screw working against one plate and the nut

against the other,) saving the expense of an extra screw and nut, and enabling the fastenings to be more easily and readily applied.

As either the fulcrum-plate or the stripper-plate may alone require adjustment, some provision is desirable for preventing either from falling when the nut is loosened on its screw. For this purpose we apply a spring, q^2, back of the stripper-plate, between it and the nut, the ends of the spring bearing upon the plate and its centre upon the nut, as shown at A. Now, when the nut is turned back slightly, enough friction exists, by reason of the spring, to hold the two plates in position, while permitting either to be moved without disturbing the other.

The spool-spindle g is shown as hinged to the frame, so that it may be swung outwardly, for removal of one spool or application of another.

Being so made to swing, some self-locking device is needed for maintaining it in upright position while the spool is rotating and delivering its thread. For this purpose we apply a bent spring, r, fastened at one end, by a screw, s, to a projection, t, and extending under the bar u of the frame a over the spindle g, it having a recess or bearing, u^2, into which the upper end of the spindle fits. The outer end of the screw is bent upwards slightly, as seen at B, which represents a section on the line $x\ x$.

The hinge v of the spool-spindle is so arranged that the spindle only swings in the plane of the hinge and the bearing u^2, so that when the spindle is swung up towards a vertical position, its top will always press up the spring and slip into the bearing, thus enabling the spool-spindle to be slipped from or into position with facility, and without removal of any part.

To prevent "missing" of stitches, it is necessary to drive the shaft always in one direction, and a ratchet and detaining-pawl are therefore employed to prevent back movement of the shaft.

v^2 denotes the ratchet-wheel, fixed upon the shaft c. w is the spring-pawl. Such pawls are generally hinged, and it is not only expensive to apply them, but such hinge-pins are constantly breaking, to remedy which we construct and apply the pawl as follows:

Projecting from top of frame a is a piece, x, into which is bored a socket for holding a spring, y. Into this socket, and so as to bear against the spring, is slipped the pawl w, which is simply a straight piece of wire, with a tooth or incline formed at its lower end, to slip between the ratchet-teeth, as seen at C, which shows a section in the plane of the pawl. This pawl being slipped into the socket before the shaft and ratchet are applied, the ratchet holds the pawl in position, while the spring allows it to slip back, and presses it down as the teeth in succession rotate.

All of these details of construction tend to cheapen the machine, and improve its efficiency.

We claim, in combination with the adjustable fulcrum and guide-plate m, and the adjustable stripper-plate j, the screw and nut, arranged to hold both plates in position, substantially as shown and described.

We also claim, in combination with the two plates m and j, and the screw and nut, the friction-spring q^2, arranged to operate substantially as shown and described.

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