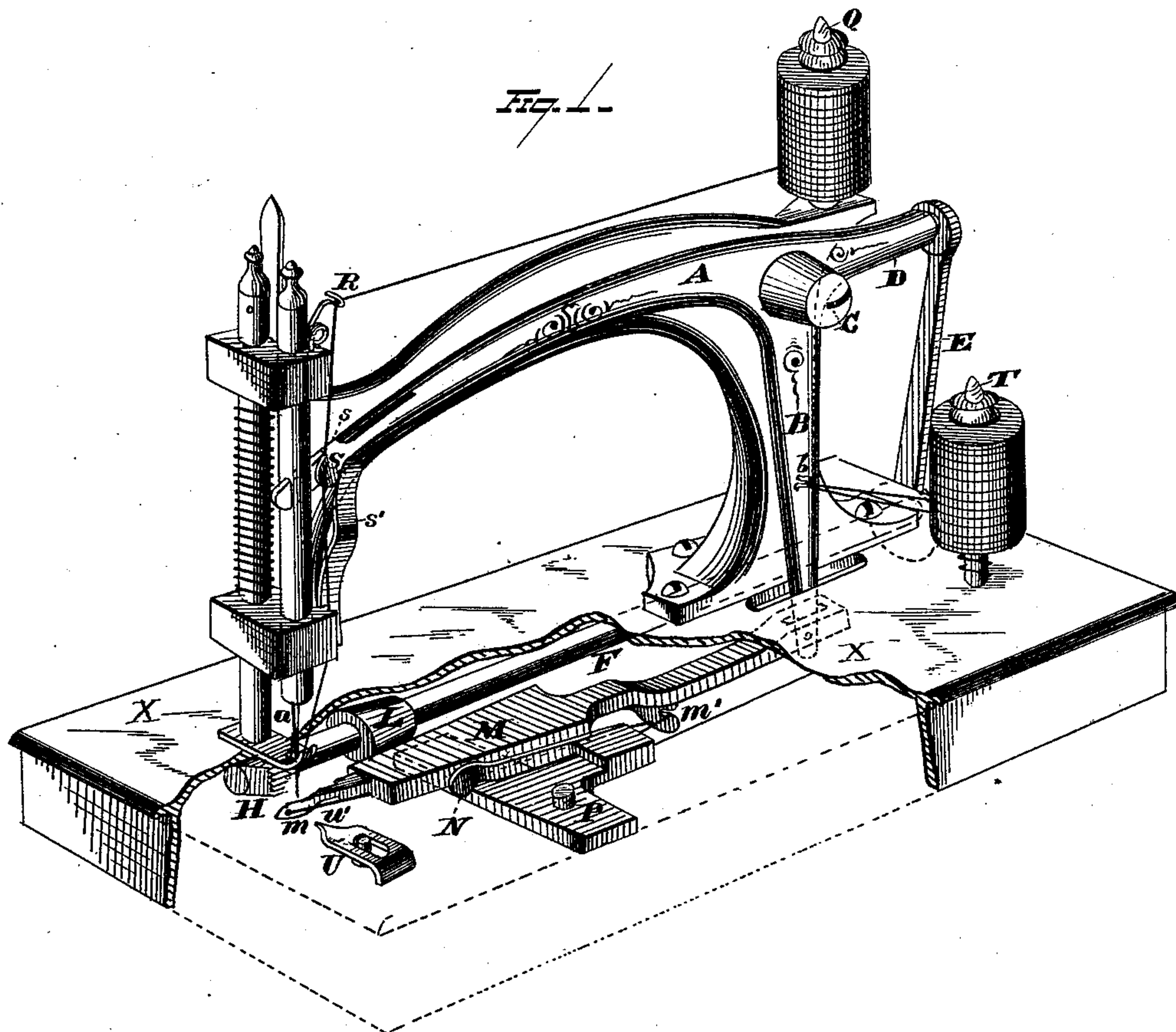


2 Sheets—Sheet 1.

F. D. ELDERFIELD.
Sewing-Machine.

No. 204,429.

Patented June 4, 1878.



WITNESSES

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Fig. 2.

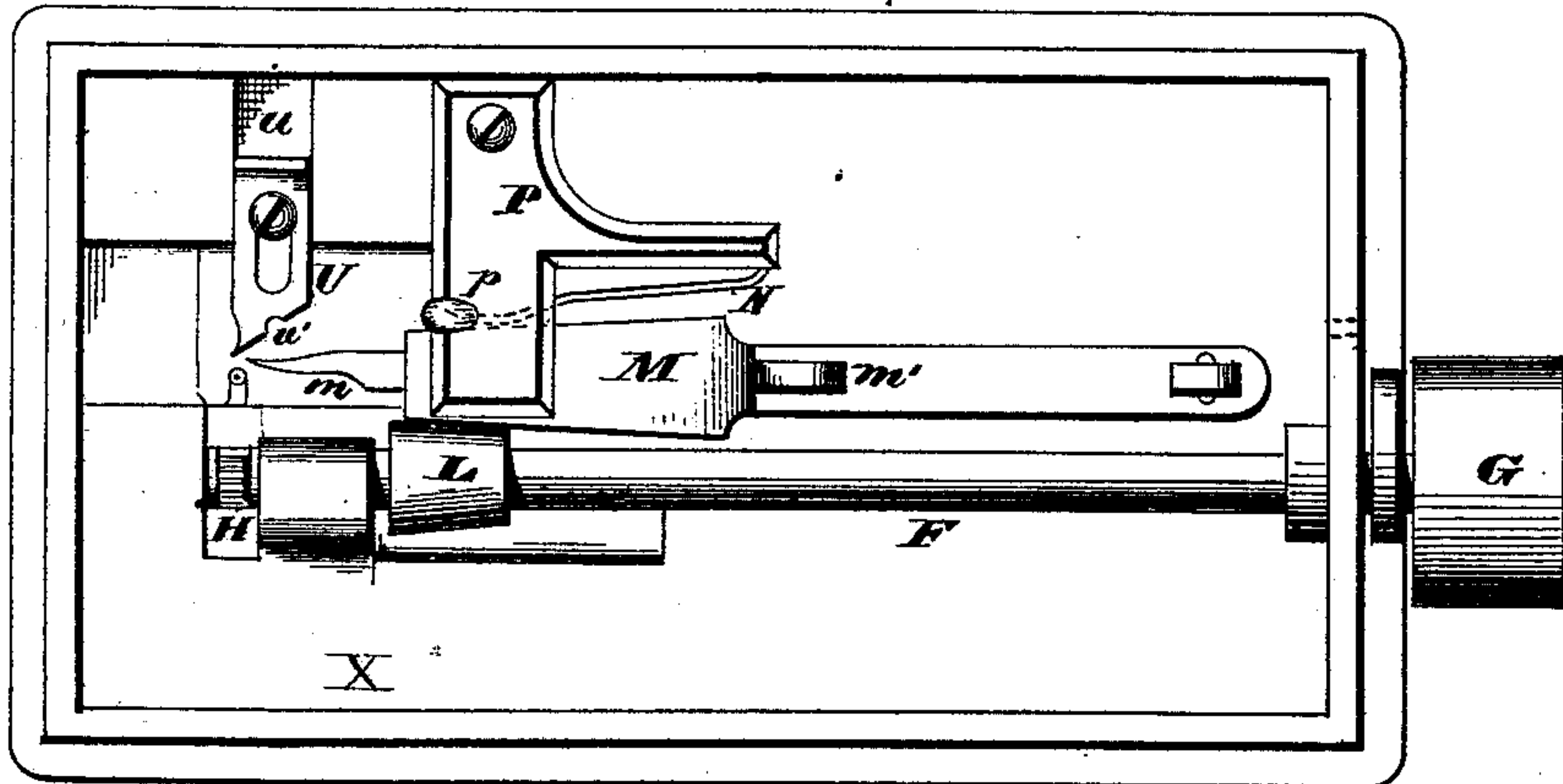
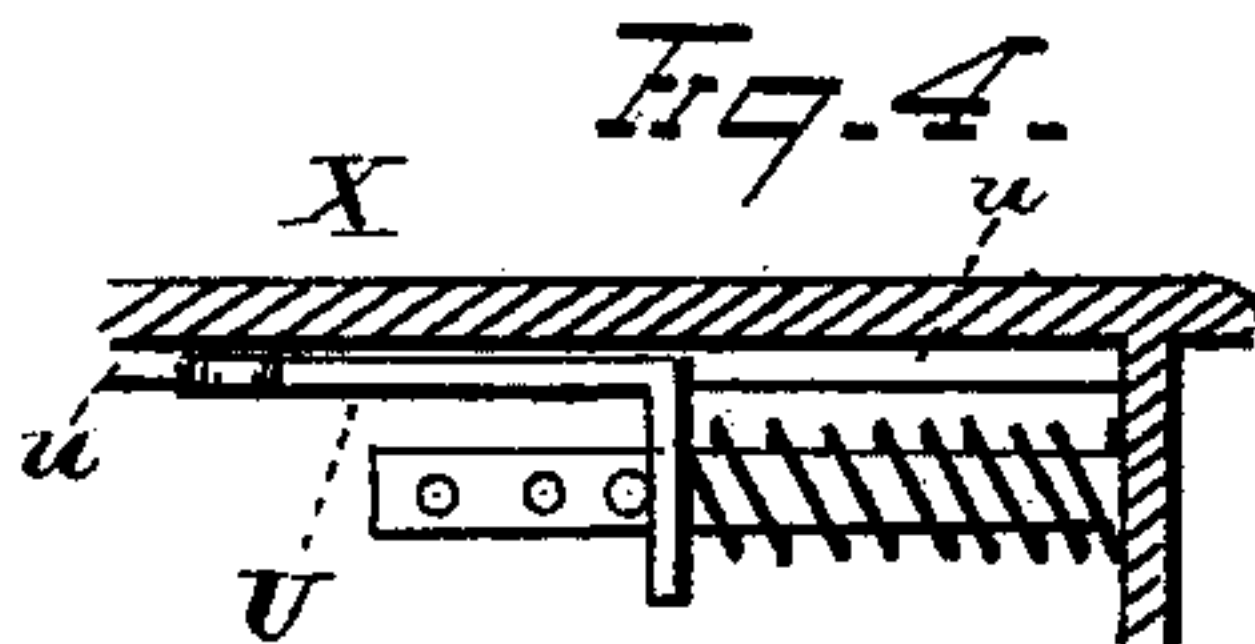


Fig. 3.



Fig. 4.



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UNITED STATES PATENT OFFICE.

FREDERICK D. ELDERFIELD, OF ST. LOUIS, MISSOURI.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. 204,429, dated June 4, 1878; application filed October 23, 1877.

To all whom it may concern:

Be it known that I, FREDERICK D. ELDERFIELD, of St. Louis, in the county of St. Louis and State of Missouri, have invented certain new and useful Improvements in Sewing-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to certain improvements in sewing-machines; and consists in the parts and combinations of parts, which will be described in the body of the specification, and thereafter further pointed out in the claims.

Referring to the drawings, Figure 1 is a view, in perspective, of my machine with a portion of its bed-plate broken away. Fig. 2 is a reverse plan or bottom view of the machine. Fig. 3 is a view, in detail, of the under needle. Fig. 4 is a detail view of a modification of the adjustable catch-piece, which will be referred to hereinafter.

The upper-needle lever A is formed in the same piece, or rigidly connected with, the under-needle lever B, and the two operate simultaneously, their common central point of movement being about the pivot C. To the rear end of the arm D, formed in longitudinal extension of lever A, is secured the upright connecting-rod E in loose engagement. The lower extremity of this connecting-rod is provided with an annular collar, fitting over a cam-eccentric on the shaft F, and thus the rotating movement of this latter shaft is converted into a vertical vibration of lever A upon its pivoted fulcrum C. G is a band-pulley on the rear end of shaft F, while on the opposite extremity of said shaft is provided the rotating feeder H. This feeder is formed as a sector of a wheel or plate-disk whose arc-surface is roughened or serrated, so as to engage with the fabric being stitched.

The tapering eccentric-cam L is formed on the shaft F, so as to engage with the side of the free end of the under-needle bar M, and gives to the latter a reciprocating lateral movement in simultaneous connection with

its longitudinal reciprocating movement. A spring, N, secured to the guide-piece P, serves to throw the needle-bar laterally over to its former position after its release from the bearing action of the tapering eccentric-cam L.

In operation as a double-thread-stitch machine, the spool of upper thread is placed on the upper tension-post Q and the thread passed forward through the spring-hook R, thence downward through the clamp S and into the eye of the needle *a*. This clamp S is on the side of the upper-needle lever, and is made as a spring, to bind the thread in suitable tension. It has a right-angular guard-projection, *s*, on its upper side to keep the thread in proper place, and the upright spring-pressure piece *s'* serves, by its bearing against the clamp, to automatically regulate the tension. The lower spool is placed on its tension-post T, so as to run to the left. The thread is passed around the hook *b* formed on the under-needle lever B, thence through a hole in the rear end of the supporting edge or rim of the bed-plate. The thread then passes over the post-hook *p* on the guide-piece P, backward over the eye-hook *m'* of the under-needle bar, then through the eye of the under needle. Both upper and under threads are then placed beneath the presser-foot, the fabric laid thereon, and, the presser-foot being released, so as to bear down upon the fabric, the machine is in operative condition for making the Grover & Baker double-loop stitch.

When it is desired to change the parts of the machine in order to sew a single-thread stitch, the adjustable or sliding catch U is brought into operation, and its function is to take the needle-thread loop from off the under needle, which latter at this time acts as a looper—that is, the machine is used with but the upper thread, while the lower thread remains unused, and, if desired, may be removed from its connecting parts, though this is not necessary. The loop-catch U is moved in its grooved guide *u* in the bottom side of the bed-plate X so that its point *u'* may be adapted to bear against the side of the under needle during the return stroke of the latter.

This loop-catch may be provided with a spring and suitable engaging mechanism, if

desired, in substitution of the longitudinal slot and set-screw, as shown in Fig. 4 of the drawings, to regulate its adjustment forward or backward in its sliding groove.

The machine is now ready to make a single-thread chain-stitch; and as the upper needle ascends in its return movement the loop of needle-thread is carried by the under needle or looper over toward the catch U, and is caught by it during the return movement of the under needle and slid off from the latter, and the upper needle in its next descent passes through the loop thus formed.

To cause the same under needle to be used in sewing both double and single thread stitch, I make the said under needle in the form shown in detail in Fig. 3 of the drawings. Its side is provided with the upper longitudinal groove *w*, having open ends at both extremities, and thus being adapted to allow the point of the loop-catch to pass therein in sewing the single-thread stitch, and to readily remove the needle-thread loop from off the under needle.

The machine thus made uses two straight eye-pointed needles, which, when both are threaded, sews the Grover & Baker double-loop stitch, while, when the upper or vertical needle alone is threaded and the loop-catch U is moved forward from out its sliding groove, a single-thread stitch is made, as described.

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

1. The combination, with the adjustable sliding loop-catch U, formed with the sharp point *u'*, of the under needle *m*, having the longitudinal groove *w* formed on its upper side body and made with open ends, substantially as set forth.

2. The combination, with spring-clamp S,

formed longitudinally on lever A, of the curved upright spring-pressure piece *s'*, the latter being adapted to bear against the clamp, and thus bind the thread intermittently during both the upward and downward strokes of said needle-bar lever, substantially as set forth.

3. The spring-clamp S, formed in same piece with the longitudinal side body of the lever of the upper-needle bar, and provided with the upper right-angular projection *s*, in combination with the upright spring-pressure piece *s'*, the latter adapted to bear against said clamp and cause it to bind the thread intermittently during both the upward and downward movement of the needle, substantially as set forth.

4. The combination, with spring-clamp S, formed in single piece longitudinally on the side body of lever A, of the spring-pressure piece *s'*, the latter curved in its vertical body, as shown, and adapted to bear intermittently against the same side of said clamp during both the upward and downward strokes of said lever, substantially as set forth.

5. The combination, with shaft F, provided with the tapering eccentric-cam L, of the under-needle bar M, together with mechanism for actuating the same, the longitudinal spring N, and the plate P, said plate and under-needle bar being formed, respectively, with the post *p* and hook *m'*, which are adapted to engage the thread of the under needle, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 10th day of October, 1877.

FREDERICK D. ELDERFIELD.

Witnesses:

WM. E. LENCK,
CHAS. H. ADAMS.