

S. A. WITHERSPOON.

TENSION DEVICE FOR SEWING-MACHINES.

No. 176,211.

Patented April 18, 1876.

Fig. 1.

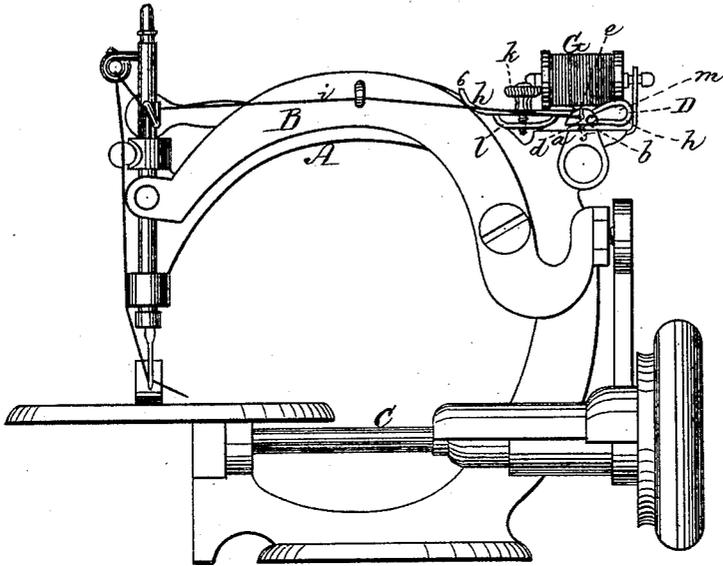


Fig. 2.

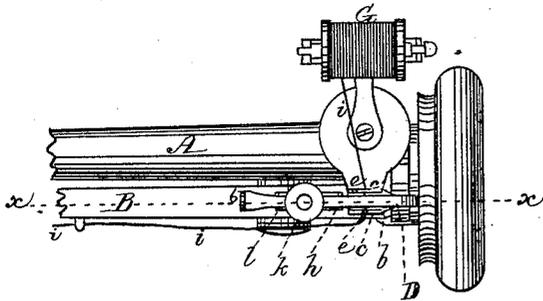
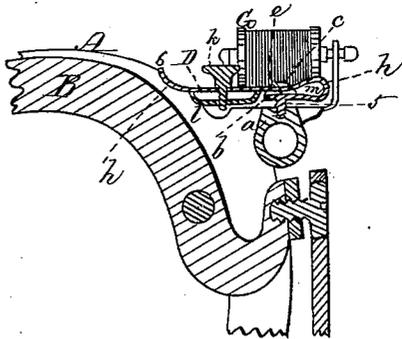


Fig. 3.



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UNITED STATES PATENT OFFICE.

SEWALL A. WITHERSPOON, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN TENSION DEVICES FOR SEWING-MACHINES.

Specification forming part of Letters Patent No. **176,211**, dated April 18, 1876; application filed January 31, 1876.

To all whom it may concern:

Be it known that I, SEWALL A. WITHERSPOON, of Boston, in the county of Suffolk and State of Massachusetts, have invented an Improved Automatic Tension Device for Sewing-Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a side elevation of a sewing-machine having my automatic tension device applied thereto. Fig. 2 is a plan of a portion of the same. Fig. 3 is a vertical section on the line *x x* of Fig. 2.

My invention consists in a spring tension device of peculiar construction, which clamps and holds the thread rigidly until the needle has nearly reached the end of its upward stroke, and until the thread has been drawn up into the cloth to the proper position to complete the stitch, the end of the spring-clamp being placed in the path of the needle-arm, so as to be struck and raised thereby, to release the thread and allow a sufficient amount thereof to be withdrawn without tension from the spool for the formation of the succeeding stitch, by which means I am enabled to sew thin fabrics of fine texture without liability of puckering.

My invention also consists in a regulating device for changing the position of the end of the thread-clamping spring, by which the distance to which it is raised by the needle-arm may be varied in order to let off more or less thread, as desired.

To enable others skilled in the art to understand and use my invention, I will proceed to describe the manner in which I have carried it out.

In the said drawings, A represents the neck of the sewing-machine, to which is pivoted the needle-arm B, actuated by an eccentric on the driving-shaft C in the ordinary manner. To a projection, *a*, at the back of the neck, near its top, is secured, by a screw, 5, the tension device D, consisting of a piece of spring metal bent around in the form shown, the portion *b* serving as a thread-rest and being provided on opposite sides with ears or lugs *c*, in each of which is formed a hole, *d*, for the reception of the thread, a slit, *e*, communicating with

each hole, being formed to facilitate the entrance of the thread. The upper portion of the tension device consists of a spring, *h*, which is turned up at its outer end 6 and projects out over the needle-arm B into a position to be struck and raised thereby as it ascends. The thread *i* is led from the spool G through the holes in the ears *c*, passing under the spring *h*, which presses it down on the thread-rest *b*, the upper surface of which is curved or slightly rounded, the thread being thus clamped rigidly until the needle has nearly reached the end of its upward stroke, when the needle-arm B comes in contact with the end 6 of the spring *h*, which is thereby raised so as to relieve the pressure on the thread and release it, so as to allow a sufficient amount to be withdrawn from the spool to form the succeeding stitch. On the descent of the arm B the spring *h* returns to its normal position and again clamps the thread, which is held rigidly, as before described, until the thread has been drawn up into the cloth to complete the stitch. *k* is a thumb-screw, which passes through the spring *h* into a bar, *l*, thereunder, this bar being bent so that its extremities only come in contact with the under side of the spring *h*, and, by clamping this thumb-screw down upon the spring, the portion thereof between the extremities of the bar *l* is deflected downward, which produces a corresponding upward deflection of the outer end 6 of the spring, which thus removes it farther from the needle-arm B, and consequently lessens the distance which it is raised thereby; and by this means the device may be regulated for threads of different thicknesses, and the length of time during which the pressure on the thread is relieved varied, as desired, in order that more or less thread may be withdrawn at each operation of the needle, to conform to the thickness of the material being sewed.

In applying the thread, it is first passed through the loop *m* of the tension device and brought forward, between the spring *h* and the thread-rest *b*, into a position to enter the slits *e*, by which it is guided into the holes *d* in the ears *c*, this operation being performed in a ready and convenient manner.

The above-described tension device is simple and inexpensive, quickly and easily ad-

justed with a great degree of nicety, and by its use I am enabled to sew thin materials of fine texture without liability of puckering.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The within-described tension device D, consisting of a thread-rest, *b*, and a clamping-spring, *h*, in combination with and operated by the needle-arm B of a sewing-machine, substantially as and for the purpose set forth.

2. The screw *k* and bar *l*, in combination with the spring *h*, substantially as and for the purpose described.

Witness my hand this 25th day of January, A. D. 1876.

SEWALL A. WITHERSPOON.

In presence of—

P. E. TESCHEMACHER,
W. J. CAMBRIDGE.