J. REECE.

Thread-Tension Device for Sewing Machines

No. 164,035. Patented June 1, 1875.

Fig 1.

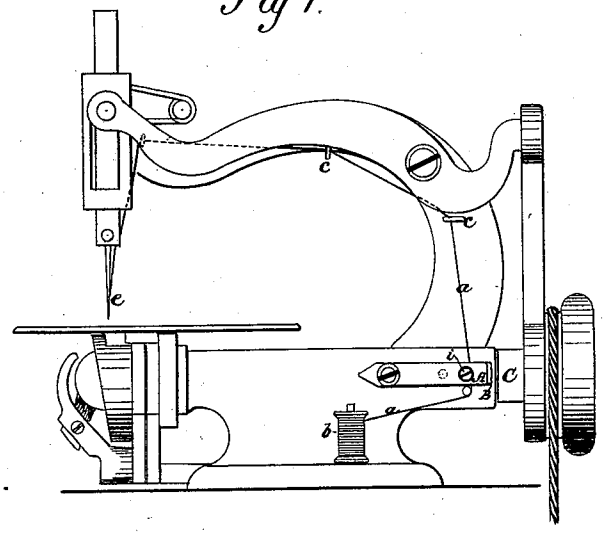


Fig 2.

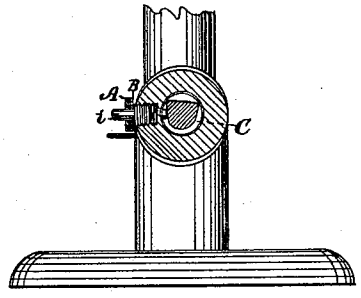
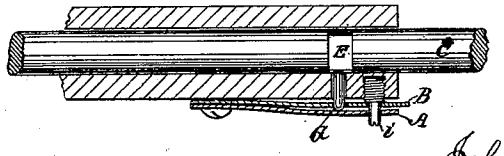


Fig. 3.



WITNESSES:

Solon C. Kemon

H. Sellers

INVENTOR:

John Reece

BY Munn & Co

ATTORNEYS.

THE GRAPHIC CO. PHOTO-LITH. 39 & 41 PARK PLACE, N.Y.

UNITED STATES PATENT OFFICE.

JOHN REECE, OF STANSTEAD, CANADA, ASSIGNOR TO OZRO MORRILL, OF SAME PLACE.

IMPROVEMENT IN THREAD-TENSION DEVICES FOR SEWING-MACHINES.

Specification forming part of Letters Patent No. **164,035**, dated June 1, 1875; application filed February 1, 1875.

To all whom it may concern:

Be it known that I, JOHN REECE, of Stanstead, in the Province of Quebec and Dominion of Canada, have invented a new and Improved Thread-Tension Device for 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 drawing, forming a part of this specification, in which—

Figure 1 is a side elevation. Fig. 2 is a transverse section through the cam. Fig. 3 is a longitudinal section.

My invention relates to an improvement in means for controlling the supply of thread to the needle, the same consisting of spring clamping-plates, a sliding pin or push-bar, a cam-grooved shaft, and an adjusting-screw, combined and arranged as hereinafter described.

Referring to the drawing, the thread *a* from the spool *b* is conducted between the two plates A and B, which form the clamp, and thence over or through necessary guide hooks or eyes *c* to the needle *e*. The horizontal shaft C, which drives the shuttle, or its functional equivalent, in a sewing-machine, has a cam, E, formed on a portion of its length opposite the clamp-plates A B. This portion of the shaft works in contact with a small pin, G, whose outer end bears against the inner surface of the plate A, but passes freely through the plate B. The plate A is a spring, and presses firmly against the plate B, thus holding the thread immovably during the greater portion of the revolution of the shaft—*i. e.*, except when the cam E is acting on the pin G. When such action takes place the free end of spring A is pushed away or separated from plate B, thus entirely releasing the thread, and allowing a sufficient length to be drawn from the spool to form the stitch. The pin G then recedes, the spring A closes again against plate B, and the thread is tightly clamped, as before, till more thread is demanded for a new or the next stitch, except as hereinafter stated.

It will be understood that the cloth, when moved along by the feed, determines the requisite amount of thread for a stitch, be it long or short. It is after this, and just as the eye of the needle (in its descent) has passed through the cloth-plate, that the plates A B close together.

I thus dispense with and render wholly unnecessary the employment of any supplementary tension or devices, the stitch being formed entirely by aid of this one clamping device, and perfectly, whatever be the length of thread required in consequence of difference in the thickness of fabric or fineness of the thread itself.

The only adjustment of the spring-plates ever required is made at the shop, and to this end I provide a set-screw, *i*, to adjust the free end of plate B in relation to the shaft, and thus decrease or increase the time of the separation between said parts A B. The screw *i* passes through both plates A B, and has a collar or shoulder formed on it, against which the free end of plate B rests, as shown in Fig. 3.

The exception hereinbefore made relates to a second opening of the plates, which occurs when the needle is at its lowest point, and at rest, and is instantaneous. The object of this second opening is set forth as follows, it being solely for the purpose of preventing the skipping of stitches: The bag or loop through which the shuttle or hook of a sewing-machine passes is formed by the ascent of the needle, which (the thread remaining stationary) causes the thread to bulge laterally. Now, if there be a strain on the thread, it will not remain stationary, but will retract and hug the needle, and consequently no bag or loop will be formed, and a stitch will be skipped.

As my method of controlling the thread allows me to remove all but unavoidable tension, I am enabled to give the thread a chance (just before the formation of the bag or loop) to ease itself of the strain or stretch, by drawing enough from the spool (the plates being separated for that purpose) to prevent the aforesaid retraction, and consequent abortion, of the bag or loop. The sudden release of the thread is caused by the form of the cam, which is less than a right angle, and by the arrangement of plate A, and free-sliding pin *i* therewith, in the manner described.

I am aware it is not new to employ a spring-clamp, operated by a rod or bar suitably connected therewith, for acting on the needle-thread, and retarding or temporarily arresting its feed. I therefore restrict my claim to the following:

1. The cam-grooved driving-shaft C and sliding pin G, in combination with the combined spring and clamping plates A and B, all constructed and arranged as shown and described, to operate as specified.

2. In a tension device, the combination of a spring clamping-plate, A, and a sliding pin, G, with the shaft C, having a cam formed with an acute angle for acting on said plate and releasing the thread, in the manner described.

3. The combination of the plates A B and the adjusting-screw *i*, substantially as set forth.

JOHN REECE.

Witnesses:
F. D. BUTTERFIELD,
A. A. LEWIS.