

No. 106,796.

PATENTED AUG. 30, 1870.

G. L. DULANEY.
TENSION DEVICE FOR SEWING MACHINES.

Fig 1

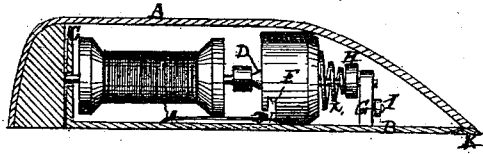


Fig 2

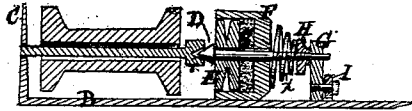


Fig 3

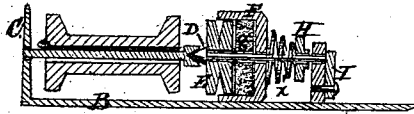


Fig 4



Fig 5



Witnesses:
Dennington Halsted
J. P. Beale.

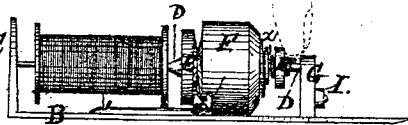


Fig. 6.

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GEORGE L. DULANEY, OF MECHANICSBURG, PENNSYLVANIA.

Letters Patent No. 106,796, dated August 30, 1870.

IMPROVEMENT IN TENSION DEVICE FOR 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 I, GEORGE L. DULANEY, of Mechanicsburg, in the county of Cumberland and State of Pennsylvania, have invented certain Improvements in Tension Apparatus for Sewing-machine Shuttles; and I do hereby declare that the following, taken in connection with the drawing which accompanies and forms part of this specification, is a description of my invention sufficient to enable those skilled in the art to practice it.

My improvements relate to a novel method of giving tension to the shuttle-thread of sewing-machines, and to the construction of devices for effecting the same; and

They consist, primarily, in the employment within the shuttle, of a revolving disk or wheel, of peculiar construction, around which the thread is passed, such disk being arranged to revolve more or less freely, at option, by varying its frictional contact against a pad; and

They further consist in the details of construction and modifications thereof hereinafter described.

Figure 1 shows a shuttle with my improvements therein.

Figure 2 is a longitudinal section of my improvements, and of a bobbin and its spindle in place.

Figure 3 is a similar section, the tension-wheel or disk being held outside its cup or shell to facilitate the threading of the same.

Figures 4 and 5 are, severally, sectional and edge views of the tension wheel, showing its peculiar grooves and ribs.

Figure 6 shows how, by the finger, the tension-wheel may be pushed out to be threaded without removing any of the parts.

A is the case or shell of the shuttle, and

B a removable plate adapted to support the bobbin, and having thereon my improvements; this plate being preferably so made that it may be readily placed and held within the case, and that its back shall form that face which rides against the vertical part of the shuttle-race of the sewing-machine.

One end, C, of this plate, serves as a bearing for one end of the bobbin when in place, the other end of the bobbin being supported upon or in a center on a spindle, D, upon which the disk revolves.

The disk or wheel is marked E, and is made of two circular plates, e, diverging from each other or beveled on their inner faces near their peripheries, these plates being soldered or otherwise united together.

In the construction shown, the groove in the periphery caused by the bevels is, on both its faces or bevels, jagged or notched as seen in fig. 5, so that while the thread is pulled to revolve the disk in the proper direction, as indicated by the arrow, it will easi-

ly release itself from the groove without chafing at the point where it is required to render out from the shuttle.

These notches are peculiar in their character, and for a special purpose. Each notch is, more properly speaking, a feather-edged furrow cut or filed into the face of the beveled part of the wheel, the line of such edge being about tangential to that circle which is the base of the bevel, or, in other words, to the central circular plane or unbeveled part or inner face of the disk-plate, (see fig. 4.)

The object of giving this form and direction to the elevated feather edge, in connection within the convergence of those of each plate with those of the other, is not only that the thread, by reason of the last-named feature, may tend to wedge itself somewhat into a narrowing space, but that in the pull the thread shall always ride down the inclined edges of the ridges which guide it positively toward the center, thus making it absolutely certain that the wheel shall be rotated, and that the thread shall not slip in the groove.

If the wheel were reversed, the positive guiding of the thread toward the center not only would not take place, but the tendency would be just the reverse; namely, to guide the thread toward the periphery, and prevent its wedging in the converging groove.

The spindle is supported in a bearing in the box F, within which the disk revolves, and also in another bearing in the upright G, affixed to the plate B, as shown.

Within the case, and between its back and the inner face of the disk, is placed a cloth or other friction-pad, g, against which the disk may be drawn with any desired degree of pressure by the following means, namely: upon the spindle at x is a fine screw-thread, to which is adapted a small nut, H, and between this nut and the box F is placed a coiled spring, which surrounds the spindle. This nut, by the action of the spring, not only serves to hold the spindle to its place, but, upon being turned in either direction, permits the adjustment of the frictional contact of the disk and pad, and the consequent tension of the thread, in the simplest manner, and with the greatest nicety and precision.

To thread the disk it is merely necessary to push the spindle inward with the finger. This pushes the disk out of its case against the force of the spring. The thread is then put into the groove, and the finger releasing the spring, all the parts spring back to place.

In the side of the box F, near the plate B, is made a small slit or opening, to permit the introduction and exit of the thread as it passes from the bobbin to, around, and from the disk.

The barrel or box is of such diameter as to barely receive and permit the unobstructed revolution of the disk or wheel, and thus prevent the thread from accidentally escaping from the groove, and it also protects the groove from dirt.

The thread, in its passage from the bobbin, is guided through the eyes 1 and 2, made in the plate the metal of the plate between these eyes being struck up, so that the thread on the outer side of the plate shall lie therein as in a groove, and thus be beneath the surface, and hence not liable to be pinched between the shuttle and the face of the race.

A swinging-latch, I, may be employed to abut against the end of the spindle when the disk is being threaded, to hold it in position.

The tip of the plate B I adapt to enter beneath a small bridge-piece, K, at the nose of the shuttle, to aid in holding the plate and its attachment when the plate is pressed to place in the heel of the shuttle.

A small notch in the upper wall of the shuttle permits the introduction of the thumb-nail, or any convenient implement, to lift the plate and bobbin to remove the same.

The thread, after leaving the tension-disk, passes through an opening in the upper side of the shuttle.

By my construction it will be seen that the entire exterior surface of the shuttle is smooth, having no screws, screw-heads, springs, or friction-brakes, to endanger or fray the thread, or prevent perfectly free passage of the shuttle through the loop of the needle-thread.

A modified construction of the tension-device differs from the above only in dispensing with the coiled spring and adjusting-nut, and substituting for the fixed upright G an adjustable upright, to which the

spindle for the disk is fixedly secured, a slot and set-screw serving to permit the adjustments needed, by shifting the position of the upright.

In pulling the thread in the direction to deliver, the drag is peculiarly efficient upon the ridges or ribs of the bevels; but if the disk were reversed, or the pull were in the opposite direction, there would be no drag, as the action of the ribs would be to throw the thread off from the center, as a millstone throws off the grain, and, consequently, out of the narrow parts of the groove instead of toward the center, and into the narrower parts.

I claim—

As a tension-device for a sewing-machine, a roller constructed with ridges arranged tangentially or nearly so, as described and shown in figs. 4 and 5, and for the purpose set forth.

Also, the combination of the post G, and loose spindle provided with a head, D, and screw-thread, with the disk E, and the adjusting nut and spring, the latter serving to hold the spindle in place as well as to vary the tension, substantially as shown and described.

Also, the combination of the barrel, tension-disk, pad, spindle, and an adjusting-device, substantially as described.

Also, the combination, with the removable face-plate of a shuttle, of a box or barrel secured thereto, adapted for the reception and protection of a tension-device, substantially as described.

GEORGE L. DULANEY.

Witnesses:

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