Sept. 20, 1938. D. H. CHASON 2,131,005

TENSION DEVICE FOR SEWING MACHINES

Filed April 21, 1936

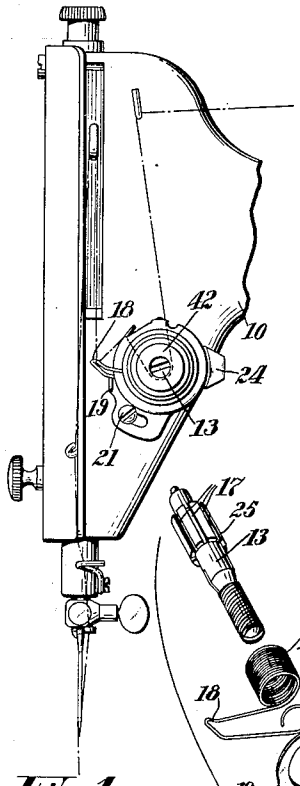


Fig. 1.

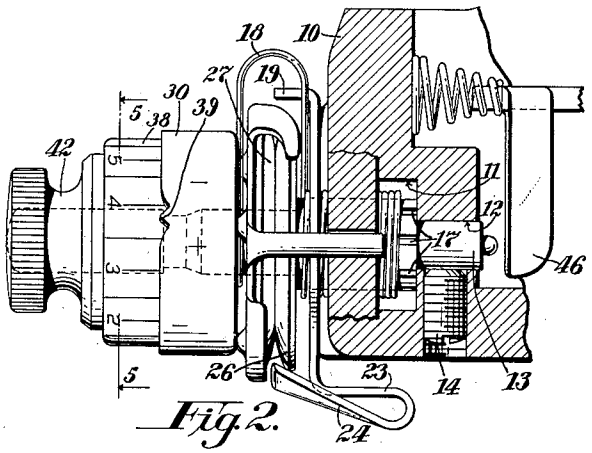


Fig. 2.

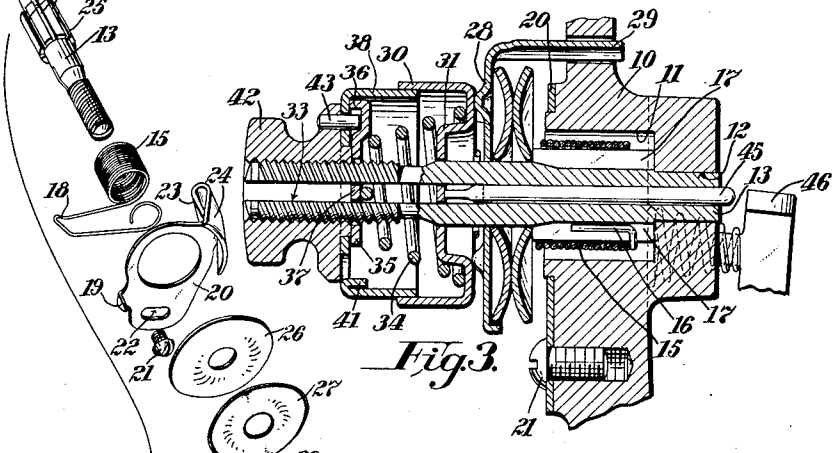


Fig. 3.

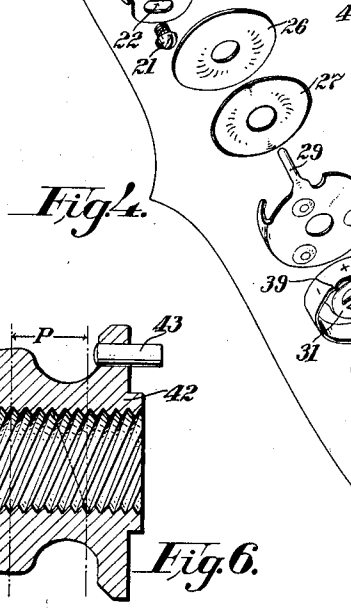


Fig. 4.

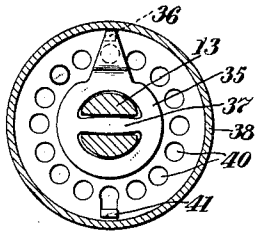


Fig. 5.

Fig. 6.

Witness:

John N. Cave

Inventor

Daniel H. Chason

By Henry J. Miller

Attorney

Patented Sept. 20, 1938

2,131,005

UNITED STATES PATENT OFFICE

2,131,005

TENSION DEVICE FOR SEWING MACHINES

Daniel H. Chason, Elizabeth, N. J., assignor to The Singer Manufacturing Company, Elizabeth, N. J., a corporation of New Jersey

Application April 21, 1936, Serial No. 75,524

6 Claims. (Cl. 242—150)

This invention relates to sewing machines and more particularly to an improved device for tensioning the needle-thread.

One of the objects of this invention is to provide an improved means for adjusting the initial tension on the spring so as to meet the minimum requirement. Another object of the invention is to provide improved means for adjusting the initial tension on the check-spring.

Another object of the invention is to provide a threading device which facilitates the placing of the thread between the tension-disks.

With the above and other objects in view, as will hereinafter appear, the invention comprises the devices, combinations, and arrangements of parts hereinafter set forth and illustrated in the accompanying drawing of a preferred embodiment of the invention, from which the several features of the invention and the advantages attained thereby will be readily understood by those skilled in the art.

Figure 1 is a side elevation of a portion of a sewing machine bracket-arm provided with a tension device embodying my invention.

Figure 2 is a side elevation of my improved tension device, a portion of the bracket-arm being shown in section.

Figure 3 is a longitudinal vertical section through the tension device.

Figure 4 is a disassembled perspective view of the device.

Figure 5 is a sectional view taken along the line 5—5 of Figure 2.

Figure 6 is a longitudinal section through the adjusting nut.

The hollow-head 10 of the usual bracket-arm is formed with a recess 11 and an aperture 12 which receives the hollow cylindrical arbor 13 of the tension device, the shank being adjustably held in position by the set-screw 14 (Fig. 2). Coiled about the arbor 13 is the usual torsion check-spring 15, the end 16 (Fig. 3) of which is anchored in one of the eight slots 17 formed in the periphery of the enlarged portion 25 of the arbor 13. The other end 18 of the torsion check-spring extends outwardly and is bent into U-shape to form a thread-engaging loop. The portion 18 of the check-spring 15 is limited in its movement in one direction by the stop-lug 19 formed on the plate 20 which is adjustably secured to the head of the machine by the screw 21 and slot 22.

The plate 20 is also formed with a backwardly extending portion 23 and a forwardly extending and inclined tongue 24, the purpose of which will be hereinafter described.

Seated against one of the shoulders of the enlarged portion 25 of the arbor 13 is the usual tension disk 26 and adjacent the disk 26 is a second tension disk 27, both disks being provided with a central aperture which receives the arbor 13, said disks having their peripheral portions bent in opposite directions so as to form a peripheral groove to receive the needle-thread. Abutting the disks 26 and 27 is a guard-plate 28 having a forwardly extending portion 29 which enters an aperture in the head of the machine (Fig. 3). Bearing against the guard-plate 28 is the cup-shaped member 30 having a centrally located raised portion 31 and a diameter bar 32 passing through the slot 33 in the arbor 13. The usual beehive spring 34 encircles the arbor and its base bears against the cup-shaped member 30 and its other end engages an anchor disk 35 formed with an upstanding stop-lug 36 and a diameter bar 37 of less width than the width of the slot 33 in the arbor.

Mounted on the arbor 13 and in telescopic relation with the member 30 is a second cup-shaped member 38 having indicia on its outer periphery which cooperate with the pointer 39 on the member 30 to indicate the degree of tension on the thread. The member 38 is formed with a plurality of apertures 40 in its base portion and a lug 41 which cooperates with the stop-lug 36 on the anchor disk 35 to limit the movement of the member 38 to one complete rotation.

The free end of the arbor 13 is formed with the well known multiple spiral screw threads, in the present instance sextuple threads, and the adjusting nut 42 is correspondingly tapped in order to receive the end of the arbor. As shown in Fig. 6, the lead of the threads is equal to the distance P, and therefore one complete rotation of the adjusting nut 42 moves the nut longitudinally of the arbor 13 a distance equal to the lead of the threads. This construction permits a beehive spring of the usual strength and stiffness to be used with a tension device in which the adjusting nut is limited to one complete rotation.

In the present instance the nut 42 is provided with a stud 43 which is adapted to enter one of the apertures 40 in the member 38. This construction causes the member 38 to rotate with the nut 42 and permits adjustment so that the initial tension on the beehive spring 34 may be obtained.

Disposed in a longitudinal aperture in the arbor 13 for endwise movement is a tension-release pin

45, one end of which is adapted to engage the diameter bar 32 of the member 30 and push the latter in a direction to relieve the tension disks 26 and 27 of the pressure of the spring 34. The pin 45 is moved longitudinally of the arbor by the bar 46 which is actuated by the usual presser-foot lifting lever.

It will be evident from the foregoing that the pressure between the disks 26 and 27 may be adjusted by rotating the nut 42 together with the member 38 on the arbor 13, and this movement will cause the nut 42 and member 38 to move the distance of the lead of the threads longitudinal of the arbor for each complete rotation of the nut 42. It will be understood that the lug 41 on the member 38 engages the stop 36 of the anchor disk 35 to limit the movement of the nut 42 to one rotation. The diameter-bar 37 having a width less than the width of the slot 33 in the arbor, the nut 42 may be turned one complete rotation.

The tongue 24 on the guard-plate 20 extends over the edge of the tension disk 26 and terminates intermediate the outer peripheral edges of the tension disks 26 and 27. The purpose of this construction is to facilitate the placing of the needle-thread between the tension disks. The threading is accomplished by placing the thread on the outer surface of the tongue 24 and then pulling the thread in such a manner as to cause it to slide down the inclined surface and finally slip over the end of the tongue and between the tension disks 26 and 27.

Having thus set forth the nature of the invention, what I claim herein is:—

1. A tension device for sewing machines comprising, an arbor, a pair of tension disks carried by said arbor, two cup-shaped members mounted on said arbor and having telescopic cylindrical flanges, one of said cup-shaped members having a series of apertures in its base portion, and an adjusting nut carried by said arbor and having a pin which is adapted to enter a selected aperture in said last-mentioned cup-shaped member.

2. A graduated tension device for sewing machines having, a longitudinally slotted supporting arbor, a pair of tension disks, a pair of telescopically arranged tubular members surrounding said arbor, one of said members being provided with a series of apertures, a spring between said members, an adjusting nut carried by said arbor and having means adapted to enter a selected aperture whereby the nut and member are locked together for rotation, and means for limiting said nut and member to one complete rotation.

3. A graduated tension device for sewing machines comprising a supporting arbor formed with a series of longitudinal slots, a check-spring coiled about said arbor and having one of its ends anchored in one of said slots and its other end extending outwardly from the arbor in a position to engage the needle-thread, a pair of tension disks carried by said arbor, telescopic cup-shaped members carried by said arbor and enclosing a compression type spring, one of said members having an indicator and the other of said members being provided with suitable indicia which cooperate with said indicator, an adjusting nut carried by said arbor and means for limiting said nut and one of said cup-shaped members to one complete rotation.

4. A graduated tension device for sewing machines, comprising a supporting arbor, tension disks carried by said arbor and having their outer peripheral portions bent in opposite directions, and a plate having a portion which embraces the arbor, said plate being formed with a tongue having a greater length than the distance between the outer peripheral portions of the disks and which is inclined towards and extends over the edge of one of the disks and terminates intermediate the outer peripheral edges of the disks for directing a thread between the disks.

5. A tension device for sewing machines, comprising a supporting arbor, tension disks carried by said arbor and having their outer peripheral portions bent in opposite direction to form a peripheral groove, and a plate formed with a backwardly extending portion which carries a forwardly extending tongue which terminates intermediate the outer peripheral portions of the disks for guiding thread into the groove between said disks, said forwardly extending tongue being inclined towards said disks.

6. A graduated tension device for sewing machines, comprising a supporting arbor, tension disks carried by said arbor and having their outer peripheral portions bent in opposite directions to form a peripheral groove, and a plate formed with a tongue which is inclined towards said disks and terminates intermediate the outer peripheral portions of the disks for directing a thread into the groove.

DANIEL H. CHASON.