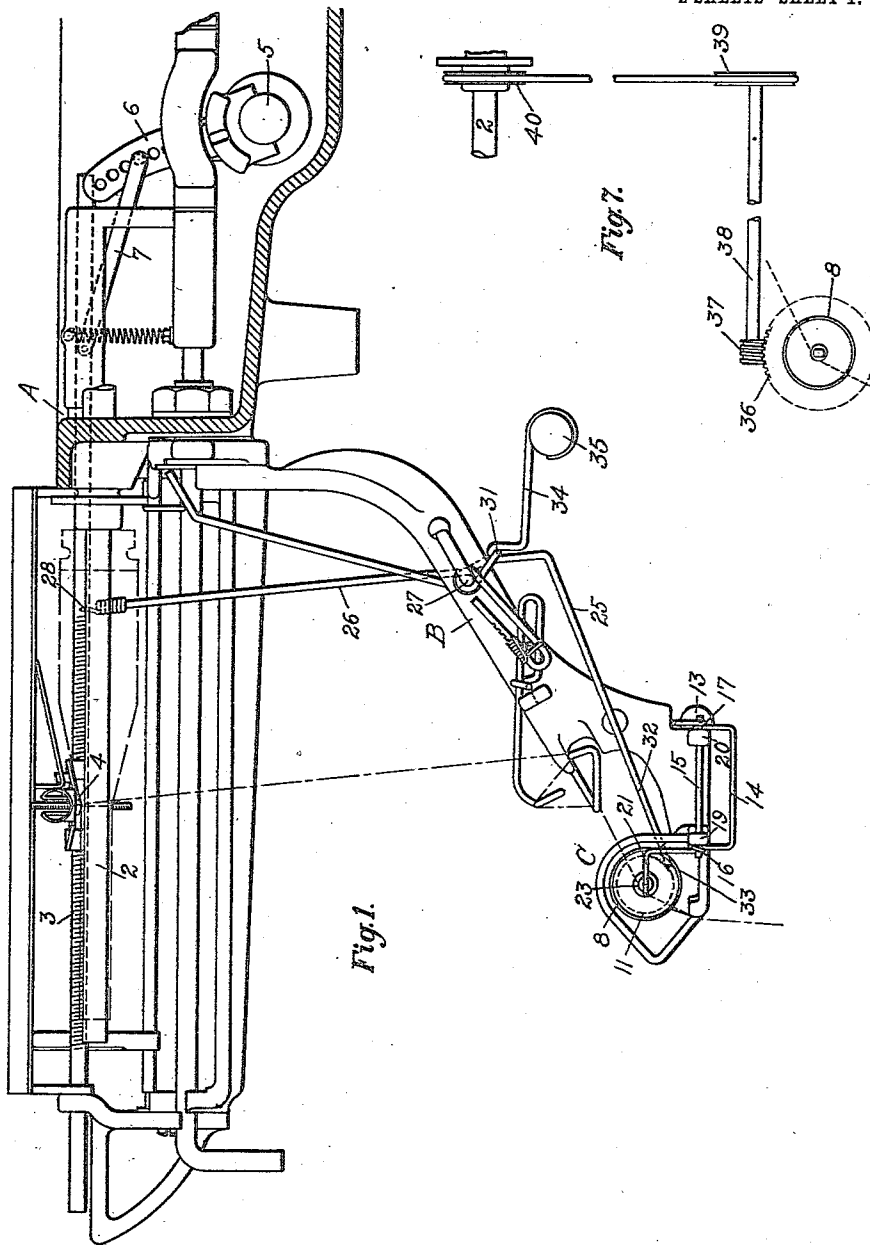


S. W. WARDWELL.  
TENSION DEVICE.  
APPLICATION FILED MAR. 3, 1908.

945,880.

Patented Jan. 11, 1910.

2 SHEETS—SHEET 1.



WITNESSES  
C. H. Taylor.  
J. J. McCarthy

INVENTOR  
Simon W. Wardwell  
BY Foster, Freeman, Watson & Co.  
ATTORNEYS

S. W. WARDWELL.  
TENSION DEVICE.  
APPLICATION FILED MAR. 3, 1908.

945,880.

Patented Jan. 11, 1910.

2 SHEETS—SHEET 2.

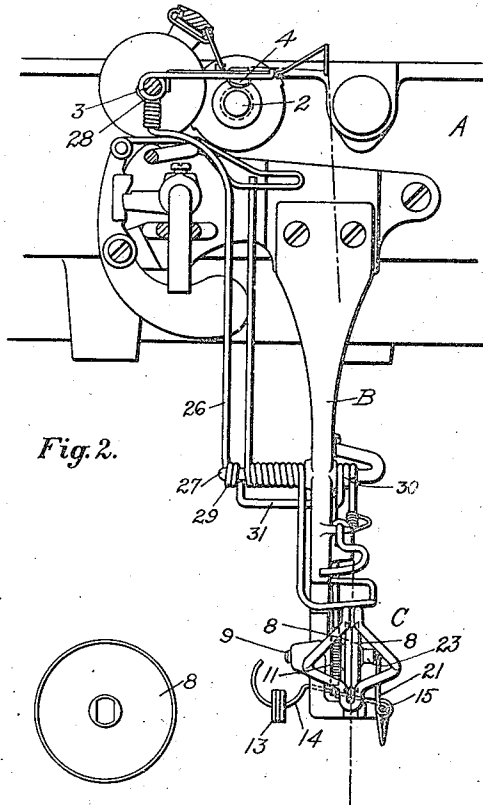


Fig. 2.

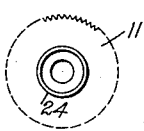


Fig. 5.

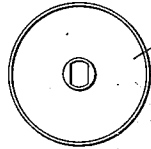


Fig. 6.

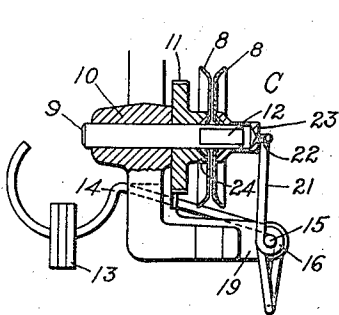


Fig. 4.

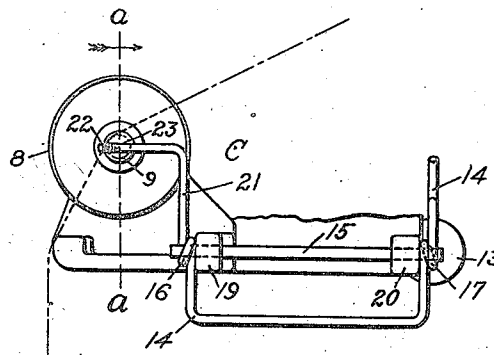


Fig. 3.

WITNESSES

C. N. Taylor  
J. J. McCarty

INVENTOR

Simon W. Wardwell  
BY John Freeman, Watson & Co.  
ATTORNEYS

# UNITED STATES PATENT OFFICE.

SIMON W. WARDWELL, OF PROVIDENCE, RHODE ISLAND.

## TENSION DEVICE.

945,880.

Specification of Letters Patent.

Patented Jan. 11, 1910.

Application filed March 3, 1908. Serial No. 418,999.

*To all whom it may concern:*

Be it known that I, SIMON W. WARDWELL, a citizen of the United States, residing at Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Tension Devices, of which the following is a specification.

My invention is a tension device of improved form and construction as is fully disclosed in the following specification and accompanying drawings, which latter show respectively:—

Figure 1, a front elevation of my improved tension device applied to a winding machine; Fig. 2, an end view of the same; Fig. 3, an enlarged view of the tension device itself; Fig. 4, a part sectional view on line *a—a* of Fig. 3, looking in the direction indicated by the arrow; Figs. 5 and 6, detail views of the parts; Fig. 7, a view showing a modification of the actuating mechanism.

Referring to Fig. 1, A represents the frame or case of a winding machine such as is disclosed in my pending application Serial No. 418,998 filed March 3rd 1908, of which winding machine, 2 is the winding spindle, and 3 the traverse-bar which carries the traverse or thread-guide 4 suitably mounted thereon. The traverse-bar and its guide are driven from the rock-shaft 5, through the traverse arm 6 and the link 7. Secured to the case A is the tension bracket B which supports the tension device C which, with its adjuncts, is the subject of this application. The tension device proper comprises two cupped disks 8,—8, whose convex faces are pressed together by suitable means. These disks are mounted on a stud or pin 9 which is adapted to be rotated from, or by, some suitable going member of the winding machine. The pin 9 has a bearing 10 in the bracket B and is preferably formed with, or has forced on to it, a ratchet 11, shown in detail in Fig. 5. The disks 8,—8 are not only dished at their outer edges, but, also, at the inner edges which bear on the pin 9, so that the yarn, as it passes between the disks and over the pin, may not encounter any rough edges that might cut or abrade it. Another purpose of this arrangement, is to provide a vent or sluice-way for particles of lint or dust, which might gather on the face of the disks and cause their separation to such an extent that they would not bear on the yarn running between them. To provide for securing the

disks rotatively on the pin 9, so that they may be turned or rotated therewith, the pin 9 is flatted at 12 and the bores of the disks formed to correspond thereto, see Fig. 6.

The disks 8,—8 are pressed together, to tensionize the yarn, by the weights 13 which hang on the lever 14, the latter being fulcrumed on the pin 15, see Figs. 3 and 4. The lever 14 is preferably of wire, coiled at 16 and 17 to form hubs to bear on the fulcrum pin 15, which is secured in the lugs 19 and 20 on the bracket B. The arm 21, which acts to press the tensions together, is slightly convex at 22, where it bears on the thimble 23. The thimble 23 caps the pin 9 and is slidable thereon, under action of the lever 14. The mouth of the thimble is flared, so as to span the inner flared portion of the disk 8 and the face of the hub 24 of the ratchet 11 is, also, correspondingly formed, where it engages the other disk 8.

Engaging the ratchet 11, is a pawl 25 which is hung on a lever 26, the latter fulcrumed on the pin 27, and so connected at 28 with the traverse bar 3, as to oscillate with the latter's reciprocation. As the purpose of the lever 26 and the nature of its connection are disclosed in a concurrent application, Serial No. 419,000 filed March 3rd, 1908, it will not be described in detail here. The lever 26 is preferably made of wire, extending downward from its traverse-bar connection at 28, in such form as to escape interference with the intervening machine members, to the pin 27, on which it has bearings in hubs 29 and 30, formed by coils of the wire, see Fig. 2.

The connecting loop 31, between the coils, affords a bearing for the pawl 25. This pawl is, likewise, preferably of wire, having an arm 32 with a sharp end 33 to engage the teeth of the ratchet 11, and an opposite arm 34 which is coiled around a counterweight 35 to hold the latter in place. The function of the counterweight is to maintain the toe or working end 33 of the pawl in engagement with the ratchet.

The operation of the device is as follows: As the traverse-bar 3 reciprocates during the winding, the lever 26 is oscillated, moving the loop 31, on which the pawl 25 has a bearing, with corresponding motion, and likewise causing the working end of the pawl to draw back over the teeth of the ratchet, make new engagement, and rotate the latter. In other words, the tension disks are posi-

tively and automatically rotated by mechanical agencies interposed between them and the traverse mechanism.

In Fig. 7, I have shown another method of imparting rotation to the pin 9 and the tension disks 8. In place of the ratchet wheel 11 is substituted a worm-gear 36, with which a worm 37 meshes, the latter mounted on a shaft 38, driven by a grooved pulley 39 which is belted to a similar pulley 40 on the winding spindle 2. With either arrangement shown, or through any similar means, the pin 9 and tension disks are continuously rotated and the yarn given a continually new bearing, thus avoiding cutting or grooving the periphery of the pin 9 or the faces of the disks. This provision eliminates the disadvantages normally incident to the use of disk tensions, by adding durability in use and preventing clogging or interference with their action, the continuous rotation of the disks across the yarn acting to clear and clean their faces of motes or particles of lint thrown off by the yarn.

Without limiting myself to the precise form of construction employed, I claim:

1. The combination with a tension device having means for bearing on the thread with a resilient pressure to apply tension to the latter, of separate, positively operated devices mechanically connected with said tension means to continuously shift the same to present new bearing surface to the yarn.

2. The combination with a tension device having opposed elements between which the thread passes, and means for causing said elements to act on the yarn with tension effect, of independent continuously operated devices, and means to connect said devices to mechanically and continuously shift the tension elements to present new bearing surface to the yarn.

3. The combination with a moving element of a winding machine, of a tension device comprising tension members between which the yarn passes, separate means to mechanically and continuously move said

members to present new surface to the yarn, and means to connect the moving element of the machine with the operating means for the tension members.

4. In a tension device, the combination with a rotatable pin, and a wheel thereon, of two tension members on the pin between which the yarn passes, means to press said members together, means engaging the wheel to rotate the pin and the tension members, and devices to actuate said rotating means.

5. In a tension device, the combination with a rotatable pin, a wheel thereon and means to rotate the two, of a disk adjacent the wheel, a second disk adjoining the first, a thimble arranged to inclose the end of the pin and bearing against the second disk, and means acting on the end of the thimble to press the disks together.

6. In a tension device, the combination with a rotatable pin, a wheel thereon and means to rotate the wheel, of a thimble on the pin and tension disks intermediate the thimble and wheel, and means acting on the thimble to press the disks together.

7. In a tension device, the combination with a rotatable pin, a wheel thereon and means to rotate the wheel, of a thimble on the pin and tension disks intermediate the thimble and wheel, and a weighted lever acting on the thimble to press the disks together.

8. The combination with the winding spindle, reciprocating thread guide and its traverse bar of a winding machine, of tension members, a wheel connected therewith, a pawl to engage the wheel to shift the tension members, and a rocking lever connected with and rocked by the traverse bar, to actuate the pawl.

In testimony whereof I affix my signature in presence of two witnesses.

SIMON W. WARDWELL.

Witnesses:

CHAS. A. EDDY,  
ARTHUR I. HARVEY.