

1,009,164.

Patented Nov. 21, 1911.

Fig. 1.

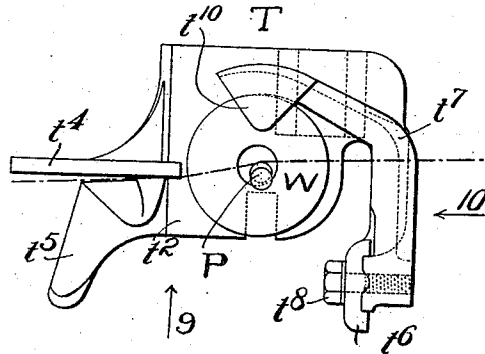


Fig. 2.

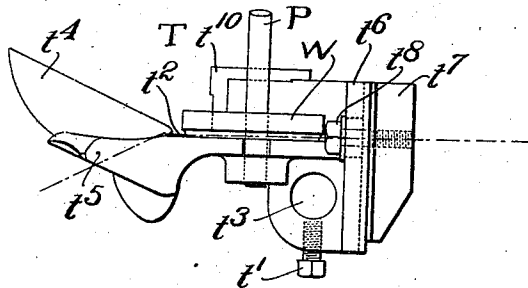
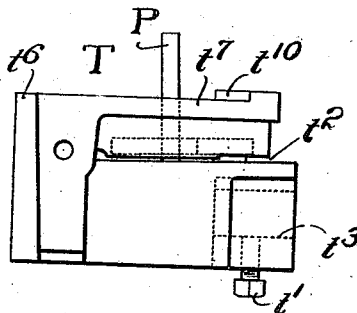


Fig. 3.



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UNITED STATES PATENT OFFICE.

JOHN O. MCKEAN, OF WESTFIELD, MASSACHUSETTS, ASSIGNOR TO FOSTER MACHINE COMPANY, OF WESTFIELD, MASSACHUSETTS, A CORPORATION OF MAINE.

TENSION DEVICE.

1,009,164.

Specification of Letters Patent.

Patented Nov. 21, 1911.

Application filed December 29, 1909. Serial No. 535,381.

To all whom it may concern:

Be it known that I, JOHN O. MCKEAN, a citizen of the United States, residing at Westfield, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Tension Devices, of which the following is a specification.

My invention is a tension device and knot-catcher for winding machines.

In the drawings: Figure 1 is a plan view of my device; Fig. 2 is an elevation looking in the direction of the arrow 9 in Fig. 1; and Fig. 3 is an elevation looking in the direction of the arrow 10 in Fig. 1.

My tension device and knot-catcher T is adjustably mounted upon a rod secured upon the winding machine in a suitable position in front of the thread guide and is normally set in position by means of the set screw t^1 at a slight outward inclination. The table t^2 is also formed at a slight inclination to the axis of the aperture t^3 through which the rod is passed upon which the device is mounted as shown in Fig. 3 of the drawings. At its outer edge the table carries two guides t^4 , t^5 and at its inner edge a slotted standard t^6 which in turn carries a knot-catcher and stop t^7 curving toward the center of the table. In the center of the table is an upwardly extending pin P, perpendicular to the surface of the table, upon which is mounted a washer W. The knot catcher t^7 can be adjusted vertically upon the standard t^6 to vary the width of the space between the bottom of the knot-catcher and the top of the table. The washer W has an aperture considerably larger than the diameter of the pin P and the relative sizes and organization of the parts are such that, if the washer W is revolved about the pin P swinging or turning eccentrically with one side of its aperture in contact with the pin, the distance between the pin P and the stop t^7 is insufficient to permit the washer to thus swing a complete revolution, in consequence of which it strikes the stop t^7 . (See Fig. 1).

The operation is as follows: The washer is mounted upon the pin P. The part t^7 is then adjusted and secured in position on the standard t^6 by the bolt t^8 . The thread is laid, as indicated in the drawings in dotted lines, with one side of the washer resting upon it and restraining it. When the winding begins the thread is drawn rapidly

through the device and the washer is rotated and owing to the slight inclination of the upwardly extending pin P, due to the slant of the table, one edge of the washer aperture will engage the pin, and when the washer is actuated by the friction of the thread, it tends to swing in a spiral path up the pin, thus relieving pressure on the thread and consequent tension and, as the actuating force upon the washer is thus correspondingly relieved, the washer tends to cease swinging and rising up the pin and drops. In case the washer attains sufficient velocity to carry it around the pin after rising from the thread, the edge of the washer will strike the stop t^7 , stopping the swinging of the washer and in consequence causing it to drop, when the action will be repeated. In actual use the washer is carried around and around in a rapid succession of very slight lifts and falls. The projection t^{10} projects from the upper edge of t^7 over the path of the swinging washer and prevents the washer from escaping from the pin or being removed therefrom unless and until the part t^7 is removed.

In many tensions heretofore used the tension member is designed for a normal speed of thread and gives excessive tension upon an abnormal increase of speed of the thread, in some, provision is made for varying the tension to meet increased thread speeds, but these compensating tensions, so far as I know, have required rather complicated mechanism to carry them into effect. The advantage of my present device is that the "normal" tension can be changed with the utmost ease and certainty by substituting one washer of a different weight for another and thereafter the compensating effect is accurately and certainly obtained by the action of the thread itself and in direct relation to the thread speed, with practically no compensating mechanism. It is a well known fact that the tensile strain upon a thread drawn against restraint increases at a greater ratio than the thread speed increase and effective and accurate compensating means are necessary for good results. Since the thread is the actuating force in my device and since the lifting of the washer to release for a minute period of time the tension is effected from moment to moment, in either direction, that is, either to increase or decrease the momentary tension, it is ob-

vious that my device has the advantage not only of extreme and elementary simplicity, but also of instantaneous responsiveness to working needs.

5 I claim:

The tension device above described, consisting of a table; an upwardly extending pin rising from the table at a slight angle from the vertical; a washer having a relatively large aperture by which it is mounted upon the pin to permit it to swing eccen-

trically thereupon; a stop above the table and set at such a distance from the pin that the washer cannot swing upon the pin without its periphery striking the arm and 15 checking the swing of the washer.

Signed by me at Boston, Massachusetts, this 27th day of December, 1909.

JOHN O. McKEAN.

Witnesses:

JOSEPH T. BRENNAN,
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