

J. O. McKEAN.
TENSION DEVICE.
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1,007,787.

Patented Nov. 7, 1911.

2 SHEETS—SHEET 1.

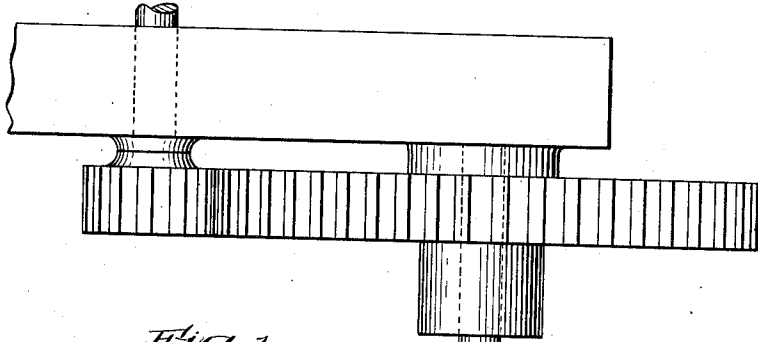


Fig. 1.

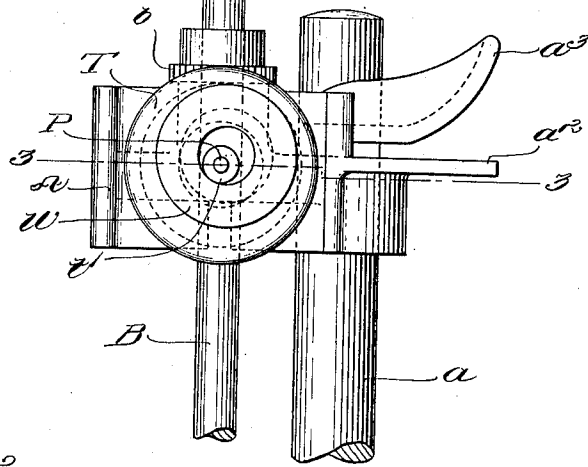
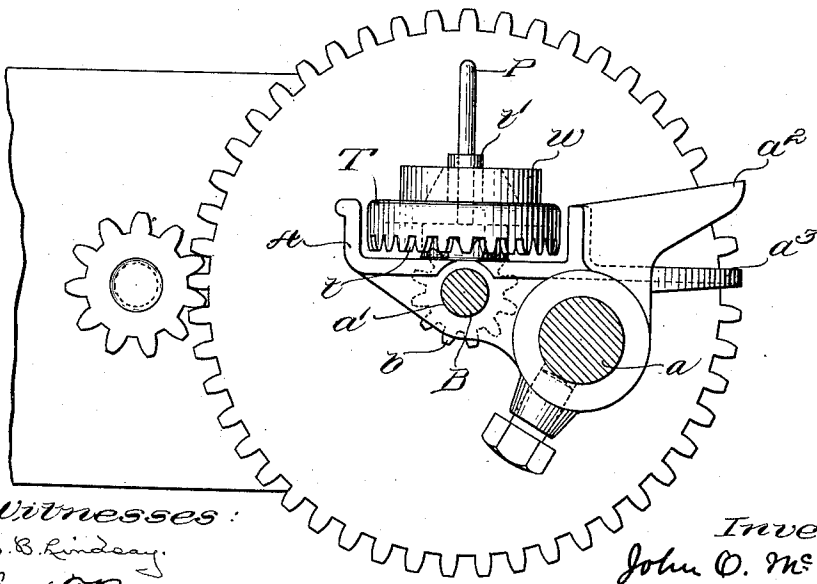


Fig. 2.

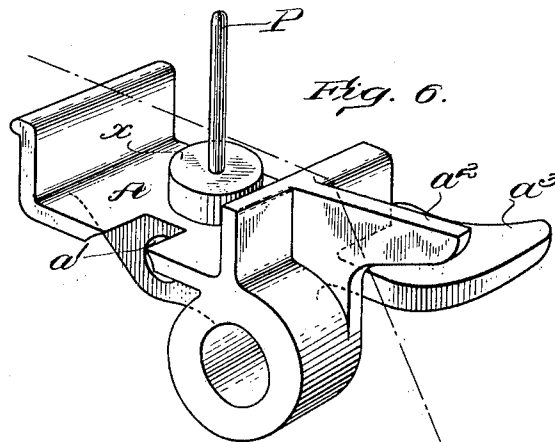
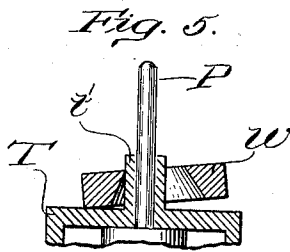
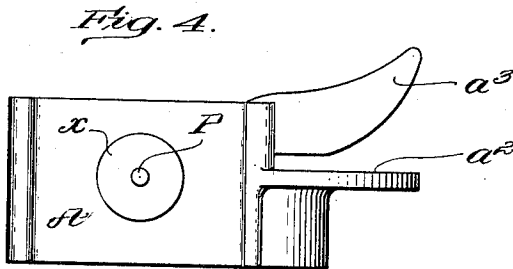
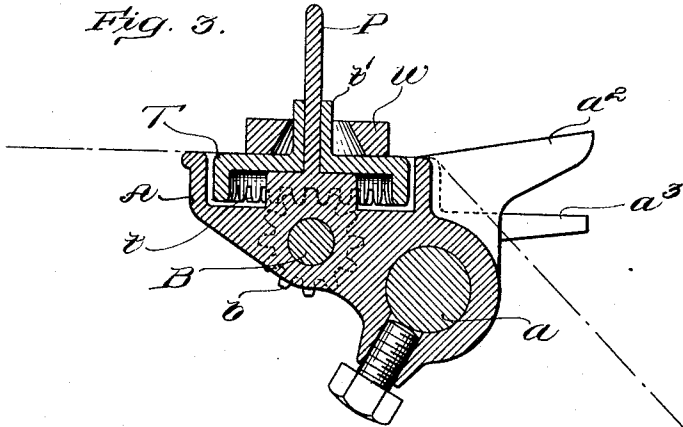


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 2 SHEETS—SHEET 2.



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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.

1,007,787.

Specification of Letters Patent.

Patented Nov. 7, 1911.

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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 for putting the required "drag" or tension upon a thread or yarn drawn through it, and has for its object to provide an improved device of this kind.

In the drawings, Figure 1 is a plan view of my device and of part of the frame of a winding machine to which the device is applied; Fig. 2 is an end elevation; Fig. 3 is a section on the line 3—3 of Fig. 1; Fig. 4 shows in plan, the frame or casting A dissociated from other parts; Fig. 5 shows the washer W in action; Fig. 6 is a perspective view of the casting A hereinafter described.

My tension device consists of a supporting casting or bracket A which may be suitably mounted upon a rod a , secured in the frame of the winding machine, and which also furnishes a bearing a' for a rotating shaft B. From the top of the bracket A projects a vertical pin P. Upon the shaft B is fixed a gear b meshing with and driving a gear t mounted for rotation upon the pin P, and integral with this gear t is a table T having an upwardly projecting bushing or hub t' . The bracket A has projecting lugs or guides a^2 , a^3 between which the thread passes from the supply, to and across the table T to the winding spindle. Upon the hub t' is mounted a washer W having a central aperture considerably larger than the diameter of the hub t' and this aperture is conical in form and in use the washer is mounted upon the hub t' with the smaller diameter of the washer aperture upward.

In winding yarn or thread and passing the same through a tension device, as is common, it is well known that the moving yarn or thread gradually wears a groove in the parts of the tension device against which it rubs in its passage, especially when the parts of the tension device are of metal rather than of porcelain or glass. Another difficulty, especially with yarns or the like which are unscoured and carry considerable amounts of oil or grease, is the fact that the

traveling yarn deposits upon the table of the tension device a certain amount of its grease, gradually building up two walls of grease, one upon each side of the path of the traveling thread. This interferes with the practical operation of the tension device, and especially so where the tension device employs a washer as one of the tension members, the deposit, in such case holding up the washer from pressing fully upon the traveling yarn.

In the operation of my tension device the thread or yarn is led between the lugs a^2 , a^3 across the table T to the winding spindle, and then the washer W is mounted in position on pin P, as above described, said washer resting upon the thread or yarn. As the thread moves it carries the washer W, which being restrained by the hub t' upon which it is mounted, the resultant movement of the washer is one of rotation about the hub. When the device is employed in a yarn winding machine, the speed with which the thread is drawn across the table T is such that the washer is very rapidly rotated about the hub t' and pin P, and as the aperture in the washer is considerably larger than the diameter of the hub, the point of contact between the edge of the aperture of the washer and the hub is so far to one side of the center of the washer that the latter rotates in an eccentric fashion and as the point of contact, owing to the conical shape of the washer aperture is also to one side of the middle plane of the washer, the latter, as it swings about the hub, tends to swing vertically to a balance on the point of contact, that is, the side of the washer diametrically opposite the point of contact, tends to rise, and the washer as a whole, to rise, in a spiral path upon the hub t' (see Fig. 5). The effect of this is, that as the speed of the thread increases to a point sufficient to cause the washer to swing about the hub t' and the pin P, the washer, owing to the shape and size of its aperture, will tend to rise from the thread somewhat, upon the hub, and, the revolving force ceasing or decreasing, as the washer rises upward away from the thread, it will then drop downward once more. It is well known that with increased speed of the thread, the effect of a constant tension is much increased, and the result of my device is, that in proportion to the increased

thread speed the tendency of the washer to lift and thus release or decrease tension becomes more and more pronounced.

The shaft B is very slowly rotated, during the winding operation, and as the gear *b* is in mesh with the gear *t* fast to the table T, which is mounted for rotation upon a bearing *x* upon the bracket A, the result is that the table T is very slowly rotated also. No grooving of the table or its parts is therefore possible, since the path of the thread is constantly over fresh surfaces, and for the same reason no accumulation of grease alongside the path of the thread is possible, the table T being completely revolved every few minutes and the thread thus sweeping every part of the surface of the table in every possible direction at every revolution of the table.

I claim:—

1. In a tension device, a rotatable thread supporting table; means, opposed thereto, to press the thread against the table and positively actuated means to rotate the table during the working of the device.

2. In a tension device, a rotatable thread supporting table; a gear fast to the under surface of that table; a second gear in mesh

therewith and mounted upon a revolving shaft driven from some source of power and means opposed to the table to press the thread against the table.

3. In a tension device, a horizontal, rotatable thread supporting table; a gear fast to the under surface of that table; a second gear in mesh therewith and mounted upon a revolving shaft driven from some source of power; a pin upwardly extending from the axis of the table and a washer loosely mounted upon the pin to press the thread upon the table, substantially as shown and described.

4. In a tension device, a thread supporting table; an upwardly extending pin; a washer having a conical aperture, the smaller end of the aperture being upward, and said washer being loosely mounted upon the pin to press the thread against the table, substantially as shown and described.

Signed by me at Westfield, Massachusetts, this 22nd day of March, 1911.

JOHN O. McKEAN.

Witnesses:

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