Jan. 1, 1952 T. K. REA 2,581,142

YARN TENSIONING DEVICE

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FIG. 1.

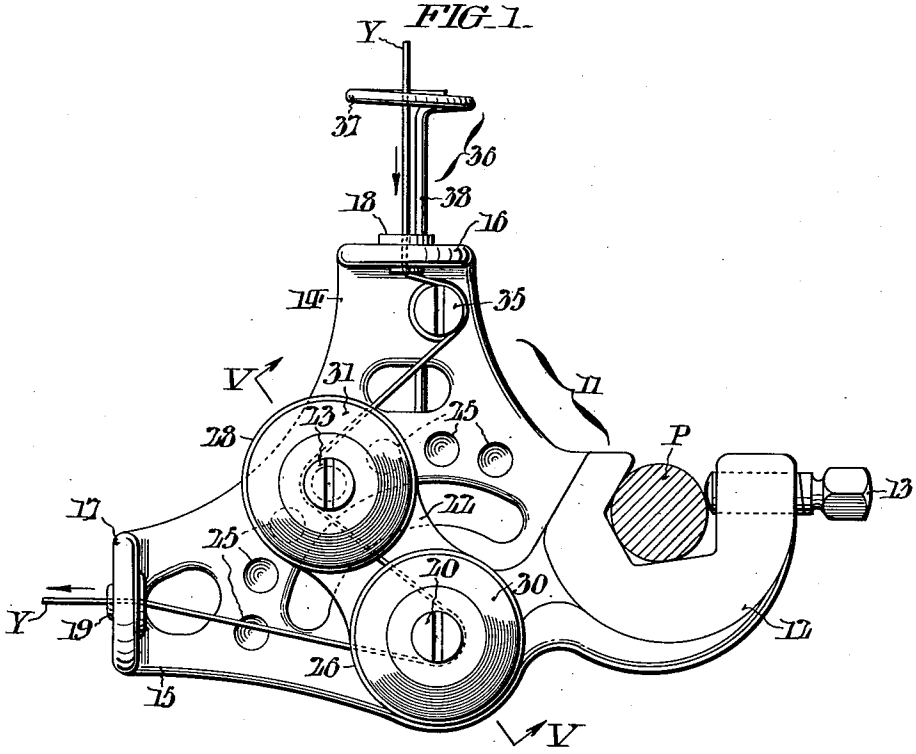


FIG. 2.

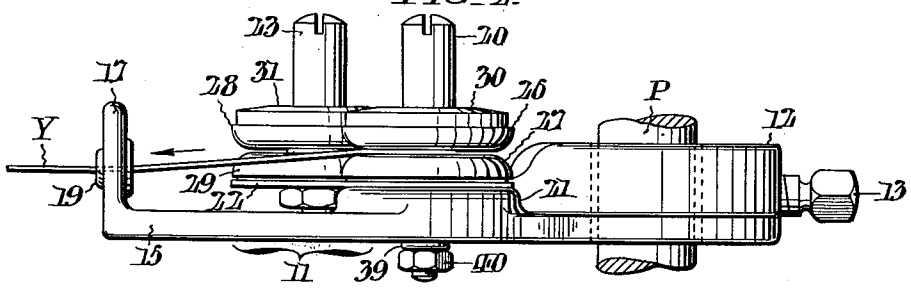
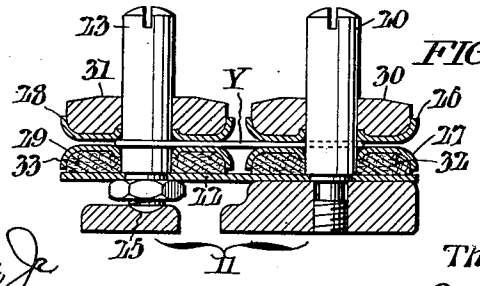


FIG. 5



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FIG. 3.

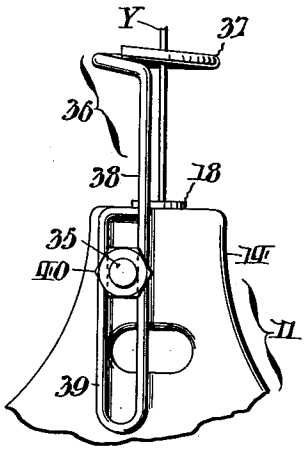


FIG. 4.

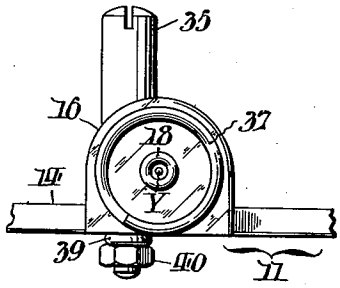
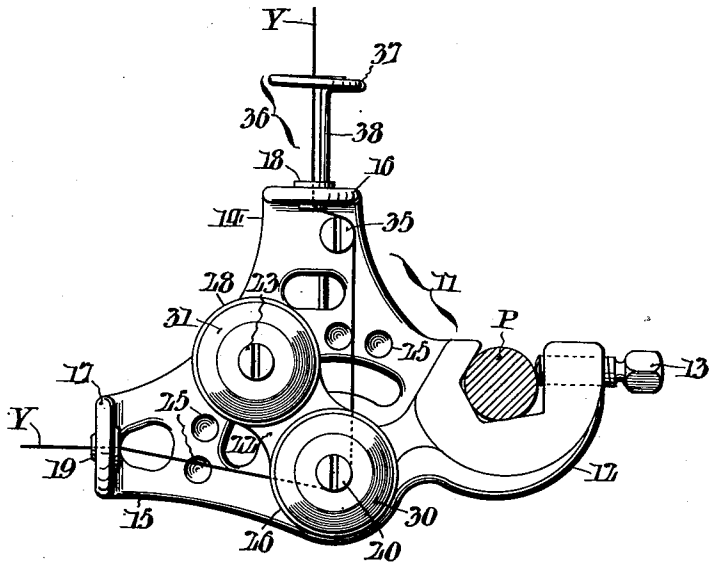


FIG. 6.



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FIG. 7.

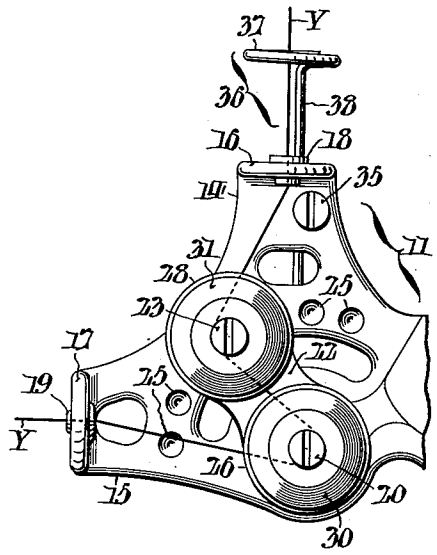


FIG. 8.

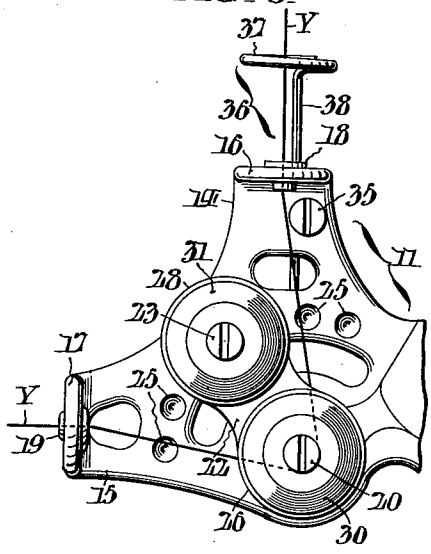


FIG. 9.

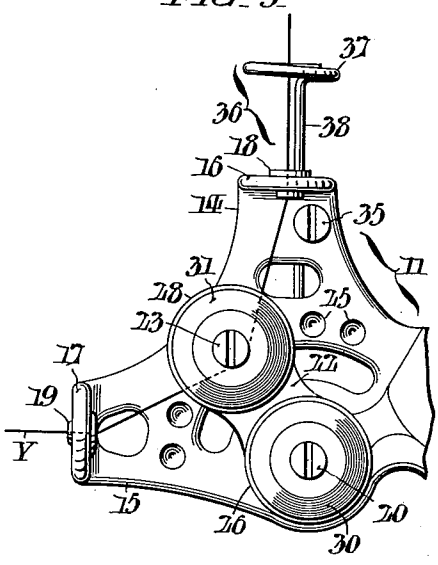
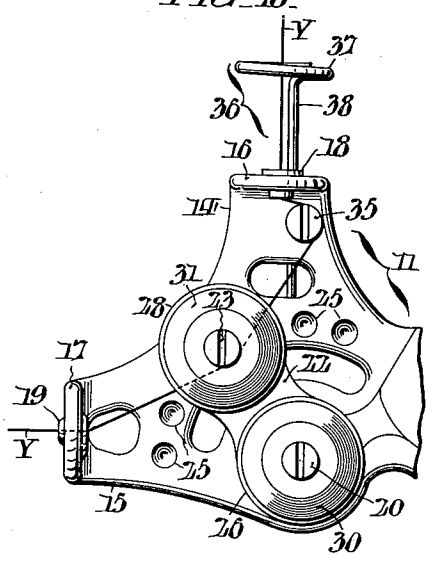


FIG. 10.



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UNITED STATES PATENT OFFICE

2,581,142

YARN TENSIONING DEVICE

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Application March 10, 1949, Serial No. 80,692

8 Claims. (Cl. 242—154)

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This invention relates to yarn tensioning devices useful in connection with textile machinery or apparatus, particularly with creels incident to beam warping and similar operations.

My invention has for its chief aim to provide a device of the kind referred to which is simple and inexpensive in construction; which is reliable in operation; which is capable of maintaining a predetermined tension on the yarn; which lends itself to threading in several different ways; and which moreover can be readily and quickly adjusted to change the imposed degree of tension on the yarn over a wide range to suit any or all requirements which are likely to be met with in practice.

Another object is to provide, in connection with the yarn tensioning device having the foregoing attributes, adjustable means for restraining the yarn against ballooning as it comes from the supply source and thereby preventing variation in the tension which it is desired to maintain.

Other objects and attendant advantages will appear from the following detailed description of the attached drawings, wherein Fig. 1 shows the top plan view of a yarn tensioning device conveniently embodying my invention.

Fig. 2 is a side elevation of the device.

Fig. 3 is a fragmentary view showing a portion of the device in bottom plan.

Fig. 4 is a fragmentary view in elevation looking as indicated by the angled arrows IV—IV in Fig. 1.

Fig. 5 is a section taken as indicated by the angled arrows V—V in Fig. 1.

Figs. 6, 7, 8, 9 and 10 are views like Fig. 1 showing various ways of threading the device.

From these illustrations, it will be noted that my improved yarn tensioning device comprises a member in the form of a bracket 11 having a jaw 12 for engaging an upright or post P to support the device in horizontal position, the set screw indicated at 13 serving to secure the bracket at the desired elevation. The extremities 14 and 15 of the bracket 10 terminate in upright lugs 16 and 17 with inset yarn guide eyes 18 and 19, and, as shown radiate substantially from an upstanding yarn directing stud 20 which is fixed in a boss 21. Fulcrumed for adjustment about the stud 21 in the interval between the latter and the guide eye 18, is an arm 22 which is fashioned from relatively thin spring metal, and provided at its distal end with an upstanding yarn directing stud 23. The arm 22 is releasably held in adjusted positions through engagement of the lower projecting end of the stud 23 selectively

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with spot indentations 25 which are arranged in an arc having its center of curvature in the axis of the fixed stud 20.

Impaled in superposed relation on the studs 20, 23 are pairs of discs 26, 27 and 28, 29 respectively, between which the yarn indicated by the letter Y is passed. It will be noted from Fig. 5 that the discs 26, 27 and 28, 29 are dished in cross section, and that they are arranged with the flat surfaces of the individual pairs opposed to each other. As further shown in Fig. 5, the disc pairs 26, 27 and 28, 29 are held down by weight collars 30 and 31 which are rotatively free on the studs 20 and 23 respectively. Washers 32, 33 of felt or the like beneath the lower discs 27 and 29 of the respective pairs impose a certain amount of frictional restraint to the turning of said disks as the yarn passes over them. At 35 is a third yarn directing stud, which rises from the extremity 14 of bracket 11 adjacent the lug 16 and which is offset laterally somewhat in relation to the eye 18 as shown in Fig. 1.

For the purpose of controlling ballooning of the yarn Y enroute from a source of supply (not shown) to the guide eye 18, I have provided a control element 36 which may be fashioned from wire as shown, with a yarn confining loop 37 and a shank 38, the latter terminating in a laterally offset elongate loop 39 (Fig. 3) arranged to be clamped to the bottom of the bracket extremity 14 by a nut 40 threaded onto the lower end of the stud 35. By virtue of this arrangement, the control element 36 can be adjusted to position its loop 37 at different distances from the guide eye 18 as may be necessary to properly hold the yarn in check.

In Fig. 1 the yarn Y enters the guide eye 18 after having traveled through the loop 37 of the control element 36, and, on its way to the guide eye 19, is diverted to first pass around the stud 35, and then about the studs 23 and 20 and between the disks 28, 29 and 26, 27 respectively on the latter studs, being thereby caused to traverse an angular path with consequent imposition of a definite degree of tension upon it. If greater or lesser tension is desired, the angularity of the traverse path may be decreased or increased simply by shifting the arm 22 clockwise or anticlockwise about the stud 21 in a manner readily understood in Fig. 1.

If a constant tension of a predetermined degree is desired, the yarn is simply passed about the studs 35 and 20 only as shown in Fig. 6.

As another alternative, the yarn may be passed directly from the eye 18 to the stud 23, and then

about the stud 20, with a possibility of adjustment of the arm 22 for variation in the applied tension.

Again, the yarn may be passed from the guide eye 18 directly to the stud 20 enroute to the guide eye 19 as in Fig. 8; or it may be passed directly from the guide eye 18 about the adjustable stud 23 on its way to the guide eye 19 as in Fig. 9.

Still another way of threading the yarn is shown in Fig. 10 where it is passed from the guide eye 18, directed about fixed stud 35 then about the adjustable stud 23 before entering the guide eye 19.

From the foregoing it will thus be seen that my improved yarn tensioning device can be threaded in various ways for imposition of different degrees of tension between wide ranges incident to delivery, and is therefore easily and quickly adaptable for use with all kinds of yarns of different weights and deniers.

Having thus described my invention, I claim:

1. A yarn tensioning device comprising a bracket with a fixed upstanding yarn-directing stud, and a fixed yarn guide eye in spaced relation to the said stud; an arm of flat spring metal fulcrumed on the stud for capacity to be shifted in the interval between the stud and the guide eye, said arm being spring biased toward the bracket; an upstanding yarn-directing stud anchored in the arm with its bottom end rounded and protruding; and a series of indentations in the support arranged in an arc concentric with the axis of the fixed stud for selective engagement by the bottom protruding end of the stud on the arm to hold the latter in adjusted positions.

2. A yarn tensioning device according to claim 1, further including pairs of friction discs impaled about the respective studs between which the yarn is passed.

3. A yarn tensioning device according to claim 1, further comprising a fixed yarn directing stud on the bracket adjacent the yarn guide eye and offset to one side of the plane common to the fixed stud and the guide eye.

4. A yarn tensioning device according to claim 1, further comprising a control element having a loop through which the yarn is passed on its way to the guide eye for restraining the yarn against ballooning; and means whereby said element is secured to the bracket with capacity for adjustment of its loop toward or away from said guide eye.

5. A yarn tensioning device comprising a bracket with a pair of fixed yarn guide eyes disposed substantially at right angles to each other and substantially equally spaced from an outstanding fixed upstanding yarn-directing stud on the bracket; an arm of flat spring metal fulcrumed on the stud so as to be moved through the interval between the latter and the two guide eyes, said arm being spring biased toward the bracket; an upstanding yarn directing stud anchored in the arm with its bottom end rounded and protruding; and a series of indentations in the bracket arranged in an arc concentric with the axis of the fixed stud for selective engagement by the bottom protruding end of the stud on the arm to hold the latter in adjusted positions.

6. A yarn tensioning device according to claim 5, further including pairs of friction discs impaled upon the respective studs between which the yarn is passed.

7. A yarn tensioning device according to claim 5, further comprising a fixed outstanding yarn guide stud adjacent one of the yarn guide eyes on the support and offset to one side of the plane common to the first mentioned stud and the guide eye.

8. A yarn tensioning device according to claim 5, further comprising a control element with a loop disposed outward beyond one of the guide eyes for restraining the yarn against ballooning on its way to such guide eye; and means whereby said control element is secured to the bracket with capacity for adjustment of its loop toward or away from the last mentioned guide eye.

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