March 20, 1945. J. C. BODANSKY 2,372,053

YARN TENSIONING MEANS

Filed Dec. 3, 1943

FIG. 1.

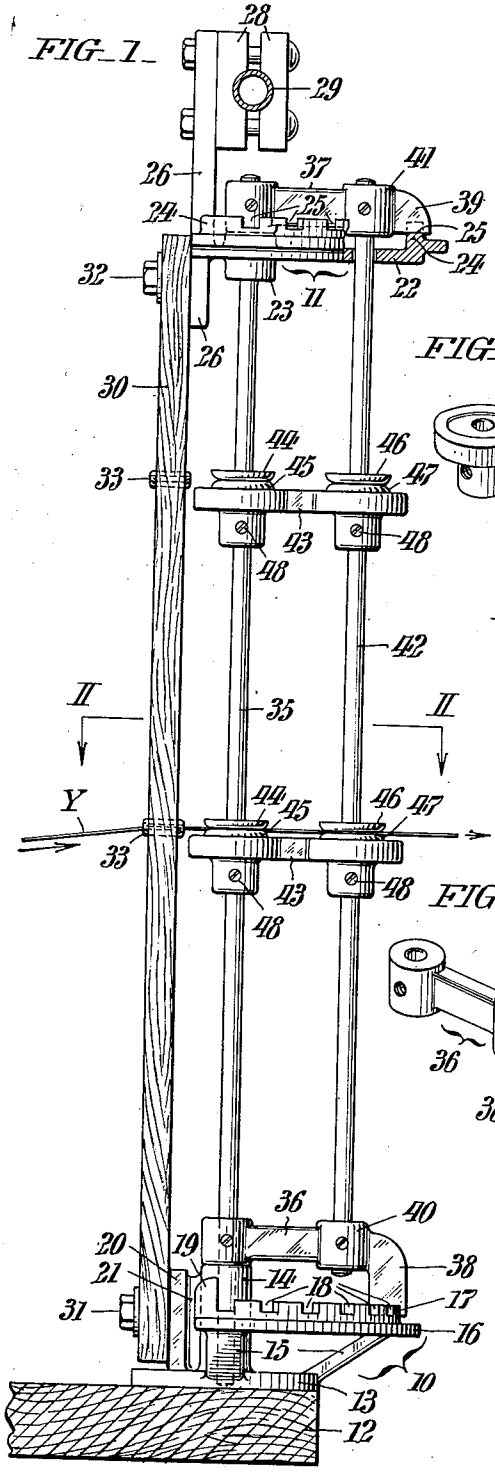


FIG. 2.

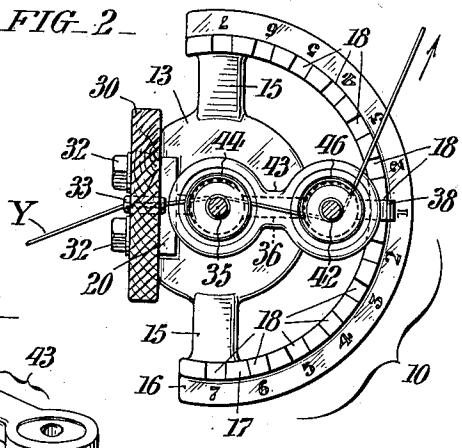


FIG. 6.

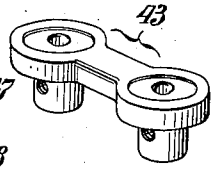


FIG. 3.

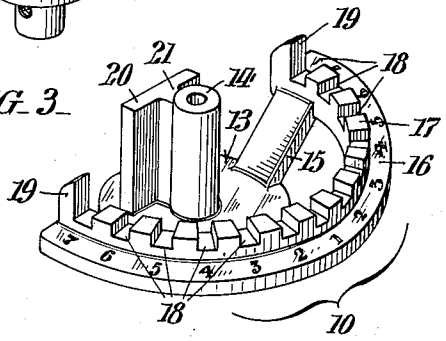
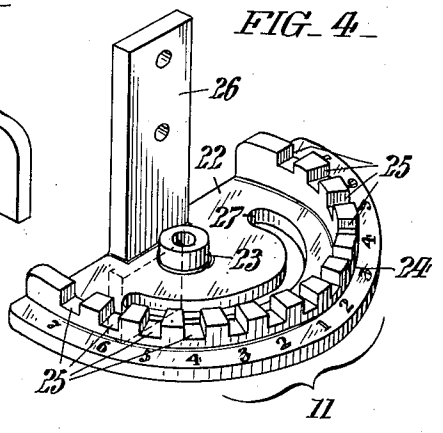


FIG. 5.

FIG. 4.



INVENTOR:
John C. Bodansky,
BY Fause + Fause
ATTORNEYS.

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YARN TENSIONING MEANS

John C. Bodansky, Gastonia, N. C., assignor to Cocker Machine and Foundry Company, Gastonia, N. C., a corporation of North Carolina

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7 Claims. (Cl. 242—150)

This invention relates to yarn tensioning means useful in the textile industry, particularly in connection with creels on which a great number of yarn supply packages are supported in suitably spaced relation to enable withdrawal of the yarns without danger of contact or entanglement with each other incident to beam or ball warping and other operations.

In creels as ordinarily constructed the yarns are directly drawn without restraint from the supply packages. Under these conditions yarns of relatively fine denier or count can be very satisfactorily wound upon beams with assurance of uniform distribution and even density. However, with comparatively heavier yarns such as the cord used in the reinforcement of the shoes of pneumatic automobile tires, the winding and distribution of the yarns on the beams is apt to vary considerably in the absence of definite control during withdrawal from the supply packages on the creel.

The chief aim of my invention is to overcome the above drawback. This desideratum is attained in practice as hereinafter more fully disclosed through provision of a simple and inexpensive tensioning means capable of serving for multiple yarns, and moreover capable of adjustment to simultaneously vary the tension induced in all the yarns under its control.

Other objects and attendant advantages will appear from the following description of the attached drawing, wherein Fig. 1 is a fragmentary view in vertical section of a creel wherewith is incorporated a yarn tensioning means conveniently embodying my invention.

Fig. 2 is a horizontal sectional view taken as indicated by the angled arrows II—II in Fig. 1.

Figs. 3, 4, 5 and 6 are perspective views of different component parts of the tensioning means which will be individually referred to hereinafter.

From Figs. 1 and 2 of the drawing it will be noted that my improved tensioning means includes two vertically-spaced brackets 10 and 11 which are separately illustrated in perspective in Figs. 3 and 4, and whereof the lower one is fixedly secured to a horizontal rail 12 of the creel. As shown, the bracket 10 has a horizontal circular center plate 13 with an upstanding tubular axial boss 14. Supported at a slight elevation above the center plate 13 by a number of inclined radial arms 15 is a concentric semi-circular sector 16 with an upstanding flange or ridge 17 having a series of spaced notches 18, said ridge terminating at its opposite ends in upright stop projections 19. At its rear, the bracket 10 is provided, for a purpose presently explained, with a flat upstanding lug 20 which is integrally connected by a web 21 with the boss 14. The upper bracket 11 which is separately illustrated in perspective in Fig. 4 is in the form of a flat semi-circular plate 22 having an axial boss 23 which extends above as well as below the plate, and a peripheral ridge 24 with notches 25 corresponding in number and in position to the notches 18 of the lower bracket 10. The upper bracket 11 also has a flat perpendicular lug 26 which extends both above and below the plate 22, and the latter is provided with an arcuate slot 27 in concentric relation to the axis of the boss 23. By means of a clamp 28 at the upper end of the lug 26 the bracket 11 is affixed to a transverse tubular beam 29 of the creel. A tie strip 30 of wood or the like extends vertically between the brackets 10 and 11, being secured to the lug 20 of the lower bracket by cap screws 31 and to the pendent portion of the lug 26 of the upper bracket by similar screws 32. Lodged in the strip 30 at intervals of its height are eyes 33 of porcelain or the like for guiding yarns such as instanced at Y in Fig. 1 en route from individual supply packages (not shown) on the creel to winding or other apparatus (not shown).

Journaled in the bosses 14 and 23 of the brackets 10 and 11 is a vertical rod or shaft 35 whereto are fixedly secured a pair of arms 36 and 37 having end projections 38 and 39 for engaging corresponding notches 18 and 25 in said brackets, one of said arms being illustrated in perspective in Fig. 5. Adjacent their outer ends the arms 36 and 37 are provided with bosses 40 and 41 wherein the opposite ends of a vertical rod 42 are fixedly secured, said rod being parallel with the rod 35 and passing with clearance through the arcuate slot 27 in the upper bracket 11. Intermediate the brackets 10 and 11 the rods 35 and 42 are connected by vertically-spaced cross arms 43 whereof one is illustrated in perspective in Fig. 6. As shown in Fig. 1, the cross arms serve as supports for pairs of tension disks 44, 45 and 46, 47 which are freely rotative about the rods 35 and 42. Upon emergence from the guide eyes 33 in the strip 30 each yarn passes between a pair of the tension disks 44 and 45, to one side of the rod 35, and from thence between the tension disks 46 and 47 to the opposite side of the rod 42. As a consequence of being secured by set screws 48, it is possible to adjust the connecting arms 43 up and down on the rods 35 and 42 to accurately position the meeting planes of the

disks 44, 45 and 46, 47 in the planes of the eyes 33.

When a change in yarn tension is desired, the rods 35 and 42 are lifted slightly to disengage the projections 38 and 39 of the arms 36 and 37 from the notches 18 and 25 of the brackets 10 and 11, whereupon said arms are swung about the axis of the rod 35 and their projections 38 and 39 engaged in other notches of said brackets. From Fig. 2 it will be obvious that when the arms 36 and 37 are moved clockwise from the central position in which they are illustrated, the tension on the yarns Y will be increased, and that when said arms are moved counter-clockwise the tension on the yarns will be decreased.

While I have shown but two of the arms 43, it is of course to be understood that a great many more of them may be employed depending upon the number of yarns which it is desired to control. Furthermore, the capacity of the unit may, if found desirable or advantageous, be amplified or reduced by changing the spacing between the brackets 10 and 11 and by correspondingly lengthening or shortening the rods 35 and 42. It is moreover to be understood that multiples of the unit are intended to be employed in large creels. Accordingly the notches in the two brackets are consecutively numbered in opposite directions from the center as shown to avoid errors when it is desired to adjust several such tensioning units in a creel to the same degree.

From the foregoing it will thus be evident that I have provided a simple and inexpensive means whereby the tension induced in a plurality of yarns may be increased or decreased in a very short space of time and with exertion of a minimum of effort.

Having thus described my invention, I claim:

1. Yarn tensioning means of the character described comprising a pair of vertically-spaced horizontal brackets with aligned bearings and notched sector portions concentric with said bearing apertures; a pair of laterally-spaced rods about the opposite sides of which yarns to be tensioned are passed, one of said rods being engaged with capacity for rotative and axial movement in the aligned bearings of the two brackets; and arms secured to the rotative and axially movable rod and carrying the other rod, said arms being selectively engageable downwardly with corresponding notches of the brackets to vary the tension induced in the yarns.

2. Yarn tensioning means according to claim 1, wherein the two rods are connected at intervals between the brackets by cross arms; and wherein said cross arms support with capacity for free rotation about said rods, corresponding pairs of superposed tension disks for engagement by the respective passing yarns.

3. Yarn tensioning means of the character described comprising a pair of vertically spaced brackets; a pair of spaced parallel vertical rods extending between the brackets and about the opposite sides of which the yarns to be tensioned are passed; and corresponding pairs of tension disks freely rotatable about the rods at intervals between the brackets for engagement by individual passing threads, the lower disk of each pair being supported from beneath, and the upper disk of each pair resting upon its mate.

4. Yarn tensioning means of the character described comprising a pair of vertically spaced brackets; a pair of spaced parallel vertical rods extending between the brackets and about the opposite sides of which the yarns to be tensioned are passed; cross arms connecting the rods at intervals between the brackets; and corresponding pairs of tension disks supported on the cross arms with capacity to rotate freely about said rods, for engagement by the respective threads.

5. Yarn tension means characterized as in claim 3, wherein one of the rods is journaled in the brackets; wherein arms are secured to the journaled rod adjacent its opposite ends and carry the other rod; and means whereby said arms may be secured in different angular positions to vary the tension induced in the yarns.

6. Yarn tension means characterized as in claim 4, wherein one of the rods is journaled in the brackets; wherein arms are secured to the journaled rod adjacent its opposite ends and carry the other rod; and means whereby said arms may be secured in different angular positions to vary the tension induced in the yarns.

7. Yarn tensioning means characterized as in claim 4, wherein guides for the individual threads are supported by a fixed member extending vertically between the brackets; and wherein the cross arms are adjustable along the rods for accurate positioning of the tension disks carried by them relative to the corresponding thread guide in said member.

JOHN C. BODANSKY.