May 3, 1932. E. R. HOLMES 1,856,188

TENSION FOR YARN WINDERS

Filed Dec. 13, 1930

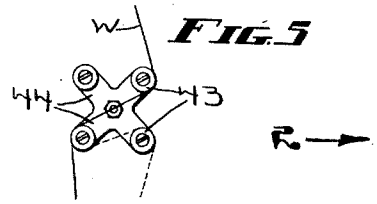


FIG. 5

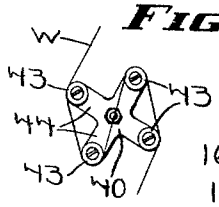


FIG. 6

FIG. 1

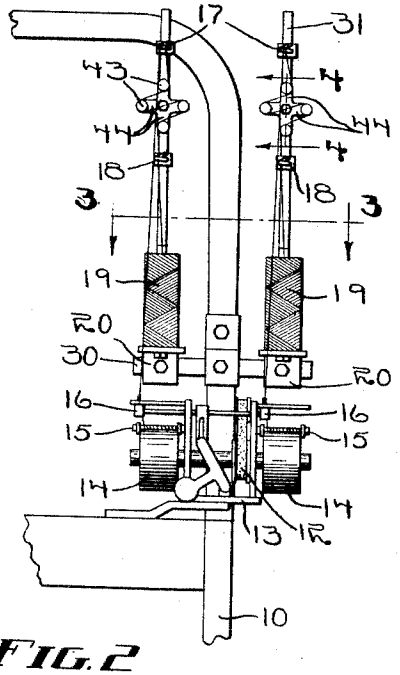


FIG. 2

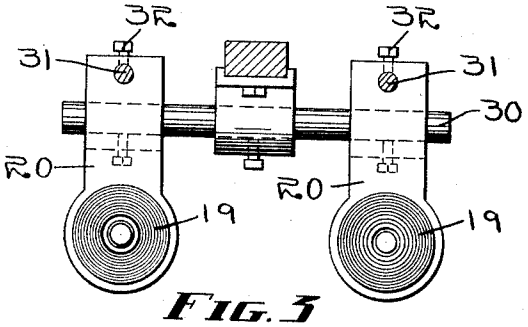


FIG. 3

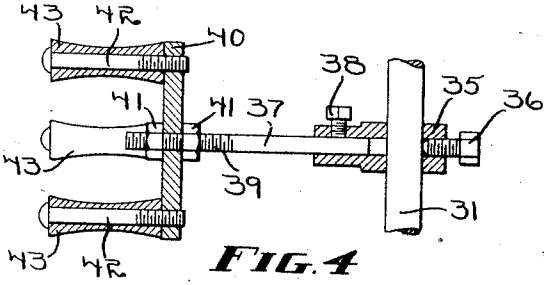


FIG. 4

INVENTOR
ELBRIDGE R. HOLMES
Smithgall, Hay & Hawley
ATTORNEYS

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ELBRIDGE R. HOLMES, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO CROMPTON & KNOWLES LOOM WORKS, OF WORCESTER, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS

TENSION FOR YARN WINDERS

Application filed December 13, 1930. Serial No. 502,177.

This invention relates to yarn winders and it is the general object of the invention to provide a simple and at the same time variable tension for yarn winders of the type which may be used for preparing quills such as are used in the shuttles of narrow ware looms.

It is another object of my invention to provide a plurality of guide surfaces so mounted that they may be altered as to their relation with respect to a predetermined path of movement of yarn so as to vary the amount of frictional contact with the yarn.

A still further object of the invention is to provide a plurality of individual but substantially similar tension elements which are mounted as a group to be rotatable about a support and also longitudinally along the latter so as to assume practically an unlimited number of angular positions for the purpose of varying tension on the yarn being wound. The mounting for the elements is such that they may be located in any angular position around the line of travel of the yarn between two guides.

With these and other objects in view which will appear as the description proceeds, my invention resides in the combination and arrangement of parts hereinafter described and set forth in the claims.

In the accompanying drawings, wherein a convenient embodiment of my invention is set forth,

Fig. 1 represents a side elevation of my improved winder as applied to a loom,

Fig. 2 is a front elevation of the structure shown in Fig. 1 taken in the direction of arrow 2, Fig. 1,

Fig. 3 is an enlarged horizontal section on line 3—3 of Fig. 2,

Fig. 4 is an enlarged vertical section on line 4—4 of Fig. 2, and

Figs. 5 and 6 are diagrammatic illustrations of various positions which may be assumed by the tension devices.

For the purposes of convenience the invention is illustrated in connection with a loom having a so-called quill winder mounted on the breast beam thereof. The loom frame 10 has a pair of guide pulleys 11 over which extends a driving belt 12 which may be driven in any approved manner as by connection with the crank shaft of the loom. The quill winder designated generally at 13 is provided with a pair of drums 14 which have driving contact with quills 15. Traversing guides 16 may be employed in any approved manner to receive the weft W which comes downwardly from an upper guide 17. A similar lower guide 18 receives the weft from a package 19 supported by a small stand 20.

The winder 13 forms no part of my present invention and is set forth merely for illustrative purposes.

Each of the drums 14 has corresponding thereto a weft package 19 but inasmuch as these packages together with their tensions are identical I will describe but one.

The loom frame is provided with a cross arm 30 on which is mounted a platform 20 and there is projecting upwardly from the cross arm a preferably cylindrical rod 31 held in adjusted vertical position by means of a set screw 32 threaded into the stand 20. The guides 17 and 18 are provided with hubs 33 which are held in adjusted angular and longitudinal position relatively to the rod 31 by means of set screws 34.

The tension proper forms a hub 35 held in adjusted angular and longitudinal position along the rod 31 by set screw 36. Projecting forwardly from the hub 35 is a rod 37 held in adjusted angular position with respect to the hub by means of a set screw 38. The end of the rod 37 remote from the hub has a threaded part as at 39 and extends through a plate 40 which is held to the rod 37 by means of check nuts 41. The plate is set forth herein as being provided with four arms into each of which is threaded a guide pin 42 supporting a porcelain friction member 43.

The set screw 38 makes it possible to dispose the cross arms 44 in any angular position relative to the line passing between the guides 17 and 18. As shown in Fig. 2 two of the guides are in a vertical alignment while the other two are in horizontal alignment. As shown diagrammatically in Fig. 6, however, the plate is set around so that the guides 43 are staggered with respect to each other both horizontally and vertically, the degree

of stagger being dependent upon the extent of angular movement of the rod 37 relatively to the hub 35.

By reason of the four tension elements 43 it is possible to provide a variety of degrees of tension. As shown in full lines in Fig. 5 the yarn is trained around opposite sides of diagonally opposite tension elements, the latter being arranged in the form of a square the diagonal of which is inclined, whereas as shown in Fig. 2 the diagonal of the square is either vertical or perpendicular. As shown in dotted lines in Fig. 5 it is possible to lead the weft over another of the friction elements and therefore increase the tension. With the tension elements 43 in any selected angular position it is possible to move them to varying distances from the guides 17 or 18 to thus afford still further means for varying the tension.

From the foregoing it will be seen that I have provided a simple form of tension device wherein a set of tension members are arranged as a group and are mounted for rotary adjustment about a support which is movable in the direction parallel to a line joining the guides 17 and 18. By giving the group of tension elements different angular positions and also by varying the number of elements which are in contact with the yarn it is possible to secure a great variety of tensions.

Having thus described my invention it will be seen that changes and modifications may be made therein by those skilled in the art without departing from the spirit and scope of the invention and I do not wish to be limited to the details herein disclosed, but what I claim is:

1. In a winder, an upright rod, a pair of spaced yarn guides mounted on the rod, a tension unit located between the guides and comprising a plurality of spaced elements fixed relatively to each other, and means to support the unit on the rod so as to assume a plurality of angular positions about the rod and with respect to a line joining the guides.

2. In a winder, an upright rod, a pair of spaced yarn guides mounted on the rod, a tension unit located between the guides and comprising a plurality of spaced elements fixed relatively to each other, means to support the unit on the rod so as to assume a plurality of angular positions about the rod and with respect to a line joining the guides, and additional means to hold the elements in a plurality of angular positions relatively to a line joining the guides.

3. In a winder having a pair of spaced yarn guides, a plurality of spaced tension elements fixed with respect to each other and forming a tensioning element, a structure fixed with respect to the guides, and supporting connections between the unit and the structure, said connections comprising a rod rotatably mounted with respect to the structure around its own axis and also around an axis of the structure.

4. In a winder having a pair of spaced yarn guides, a plurality of spaced tension elements fixed with respect to each other and forming a tensioning unit, a structure fixed with respect to the guides, and supporting connections between the unit and the structure, said connections comprising a rod rotatably mounted with respect to the structure around its own axis and also around an axis of the structure, said rod being capable of assuming a plurality of radial positions with respect to the axis of the structure.

In testimony whereof I have hereunto affixed my signature.

ELBRIDGE R. HOLMES.