

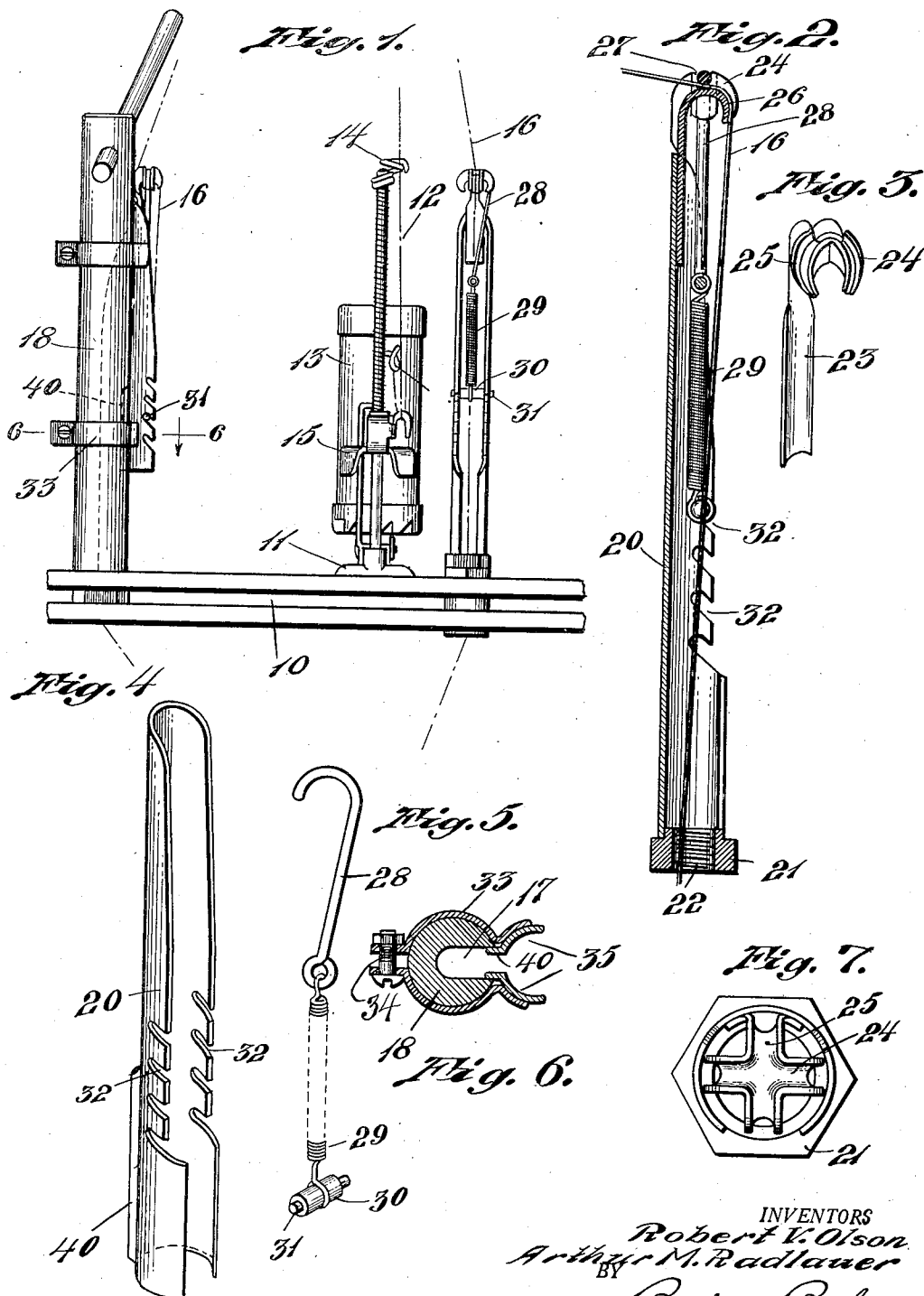
May 12, 1936.

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2,040,705

TENSION DEVICE

Filed April 19, 1934



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UNITED STATES PATENT OFFICE

2,040,705

TENSION DEVICE

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Application April 19, 1934, Serial No. 721,324

11 Claims. (Cl. 96—15)

This invention relates to a tensioning device, and has for one of its objects the provision of a tensioning device by which each of the individual threads of a fabric may be tensioned just prior to their being braided or woven into the fabric.

Another object of the invention is the provision of a device by which a uniform tension may be had upon all of the warp threads which are braided, woven or knitted into the fabric.

Another object of the invention is the provision of a tension device which when applied to a braiding machine will enable the operator to piece up broken threads more quickly than the tensioning devices which are used at the present time.

Another object of the invention is the provision of a tensioning device which will be above the raceway plate and consequently in sight of the operator, and in position where it may be easily and quickly adjusted and the ends picked up.

Another object of the invention is the provision of a tensioning device which when used on a braiding machine will hold the broken strand in such position that it will not accumulate dirt or oil or other foreign matter which is used in connection with the machine.

A further object of the invention is the provision of a tensioning device which is easily and quickly applicable to any braider without dismantling any of the parts and in fact one which may be substituted for the warp posts or easily and quickly attached to the selvage post of a flat braider.

With these and other objects in view, the invention consists of certain novel features of construction, as will be more fully described, and particularly pointed out in the appended claims.

In the accompanying drawing:

Fig. 1 is a side elevation illustrating a fragmental portion of the raceway plate of a flat braider, a braider carrier in position thereon and our tension device applied as a substitute for the warp post and also as applied to selvage posts of the machine.

Fig. 2 is a sectional view illustrating the tensioning device.

Fig. 3 is a perspective view illustrating the portion providing the guiding and contacting surfaces.

Fig. 4 is a perspective view of the standard or top post of the device.

Fig. 5 is a perspective view of the hook or pressure member.

Fig. 6 is a sectional view on substantially line 6—6 of Figure 1.

Fig. 7 is a top plan view showing the guide portions of the tension device.

The tensioning device which we have illustrated may be applied to various places, although one of its particular uses is for a braiding machine, and we have illustrated it in this use as an example.

In a braiding machine there are usually several warp strands drawn from a single spool beneath the raceway plate up through the warp posts to a central point where the fabric is formed by the intermeshing relation of the different strands and yarn manipulated by the braider carriers. Tension is applied to these warp strands below the raceway plate and usually the tension is applied upon the spool which frequently results in uneven tension on the different strands, and as breakage usually occurs adjacent the point of tension and between it and the fabric formed, the strand which becomes broken in the old construction tangles up with the other strands on the spool and also becomes soiled by reason of its contacting with the oil and dirt which collects beneath the raceway plate of the machine; and in order that these various disadvantages may be overcome, we have provided a tension above the raceway plate and in fact one which may be substituted for the warp posts, and thus a tension which is in sight of the operator and one which may be easily and quickly adjusted and also one which will hold a broken strand up through the opening in the quoit of the raceway plate so that it will not entangle with other strands nor collect oil and dirt, which occurs below the plate and may be more easily pieced up, and thus provide a device which may be better manipulated than where the tension is below the plate; and we may apply this device to a braider without dismantling by merely removing one of the warp posts and substituting our tension device therefor by setting it into position thereon, or we may clamp it upon the selvage post by a simple operation; and the following is a detailed description of the present embodiment of this invention, illustrating the preferred means by which these advantageous results may be accomplished:

With reference to the drawing, 10 designates the raceway plate of a braiding machine, which provides a sinuous path to support and guide braider carriers 11 provided with yarn 12 extending from the package 13 up through the usual guide 14, being controlled by a weight 15 or in a known manner.

The warp threads designated 16 extend up

through openings in the raceway plate usually through the quoit stud from a package with a single end thereon, which formerly in many instances contained all of the warp strands which extended up through the plate, the number depending upon the width of the fabric being braided. Also, where flat braid is formed, there is a post 18 provided usually termed a selvage post which is at one end of the path of travel of the braider carriers.

The warp posts on a braider are usually mounted at the middle of the quoit, and we have substituted for these posts a standard which is designated 20 consisting of a piece of sheet stock bent substantially half around and secured to a member 21 having an internally threaded opening 22. At the upper end of this standard; we have provided a member 23 which is provided at its upper end with grooves 24 and 25 extending in right angular directions and formed by drawing up the stock in the form desired.

The bottom of one of these grooves 24 provides a surface 26 over which the strand 16 of the work extends and is guided by the side walls, while the other groove 25 provides side walls 27 for the pressure member 28 which is in the form of a hook and serves to force the work towards the surface 26 and thus exert tension as occasion requires. This pressure is exerted through a spring 29 secured to an anchor 30 comprising a pin with reduced ends 31 of a size to fit into the notches 32 in the opposite edges of the half round portion 20 of the standard or post, and by means of this anchor which may be manually moved from notch to notch, the tension on the spring may be increased or diminished to vary the tension applied to the work extending over the surface 26.

While this standard may be substituted in place of the usual warp post, as illustrated in Fig. 1, we have, however, also provided a slightly different form of standard 20 with a tongue 40 formed on the back to extend into a slot 17 in the part 18 and also provided with clamps 33, welded at 35 to the standard to hold it in position on the selvage post 18 by bolts 34 for tightening the clamp around the post. While these clamps may be welded to the standard at 35, any other suitable means for securing the same on the standard may be utilized.

By this arrangement, an individual tension may be applied to each of the strands above the bed plate and in sight of the operator, and should the strand break, it will be clamped by the pressure member along the surface 26 where it may be easily found and pieced up, and the work continued. Further, better work is obtained by reason of the even tension and the elimination of dirt and oil where a break occurs.

The tension device works particularly well on rubber which snaps about when broken, or may be used where various kinds of yarn instead of rubber are used as warp threads in the formation of the fabric.

The foregoing description is directed solely towards the construction illustrated, but we desire it to be understood that we reserve the privilege of resorting to all the mechanical changes to which the device is susceptible, the invention being defined and limited only by the terms of the appended claims.

We claim:

1. A tension device comprising a standard provided with a guide at its upper end having a surface over and in contact with which the work

passes, a pressure member having a portion thereof positioned in said guide, and means for causing said portion to be urged towards said surface to friction the work passing therealong.

2. A tension device comprising a standard provided with a guide at its upper end having a surface over and in contact with which the work passes, a pressure member having a portion thereof positioned in said guide, and a spring for causing said portion to be urged towards said surface to friction the work passing therealong.

3. A tension device comprising a standard provided with a guide at its upper end having a surface over and in contact with which the work passes, a pressure member having a portion thereof positioned in said guide, means for causing said portion to be urged towards said surface to friction the work passing therealong, and means for adjusting the said means to apply different amounts of tension on said work.

4. A tension device comprising a standard provided with a guide at its upper end having a surface over and in contact with which the work passes, a pressure member having a portion thereof positioned in said guide, and a spring for causing said portion to be urged towards said surface to friction the work passing therealong, and means for adjusting the tension on said spring.

5. A tension device comprising a standard provided with a surface over and in contact with which the work passes, a pressure member, means for causing said member to be urged towards said surface to friction the work passing therealong, said standard being provided with notches, and resilient means secured to said member and provided with an anchor engageable with the selected notches to apply the tension desired.

6. A tension device comprising a standard provided with a surface over and in contact with which the work passes, a pressure member, means for causing said member to be urged towards said surface to friction the work passing therealong, said standard being provided with notches, an anchor to engage a selected one of said notches, and resilient means connecting said anchor and said pressure member.

7. A tension device comprising a standard provided with right angularly extending guide grooves, one of which is adapted to receive the work, a pressure member of a size to fit into the other of said grooves and be guided thereby, and means for causing said member to exert pressure on the work.

8. A tension device comprising a standard provided with right angularly extending arcuate guide grooves, one of which is adapted to receive the work, a hook-shaped pressure member of a size to fit into the other of said grooves and be guided thereby, and means for causing said member to exert pressure on the work.

9. In a braiding machine, a raceway plate, a package of strands below said plate extending therethrough to the point of braiding, a guide for each strand and having a groove therein by which a strand is guided, and means having a portion thereof positioned in said groove for engaging and applying a tension to said strand in said groove.

10. In a braiding machine, a raceway plate, a package of strands below said plate extending through said plate to the point of braiding, a guide above said plate for each of said strands and having a groove therein by which a strand

is guided, and a tension device having a portion thereof positioned in said groove for engaging and applying a tension to said strand in said groove.

5 11. In a braiding machine, a raceway plate having a quoit and supporting stud, a package of strands below said plate extending through the stud to the point of braiding, a guide for each of

said strands and having a groove therein by which a strand is guided, and a tension device supported on the quoit of said plate and having a portion thereof positioned in said groove for engaging and applying a tension to said strand in said groove. 5

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