

L. H. HORNER,  
TENSION DEVICE.  
APPLICATION FILED AUG. 20, 1918.

1,298,044.

Patented Mar. 25, 1919.

FIG. 2.

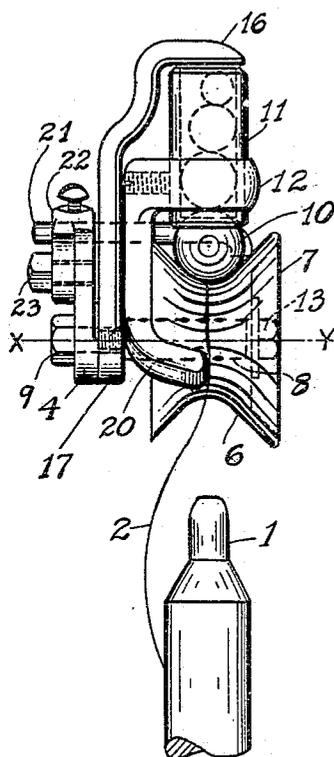


FIG. 1.

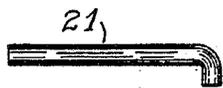
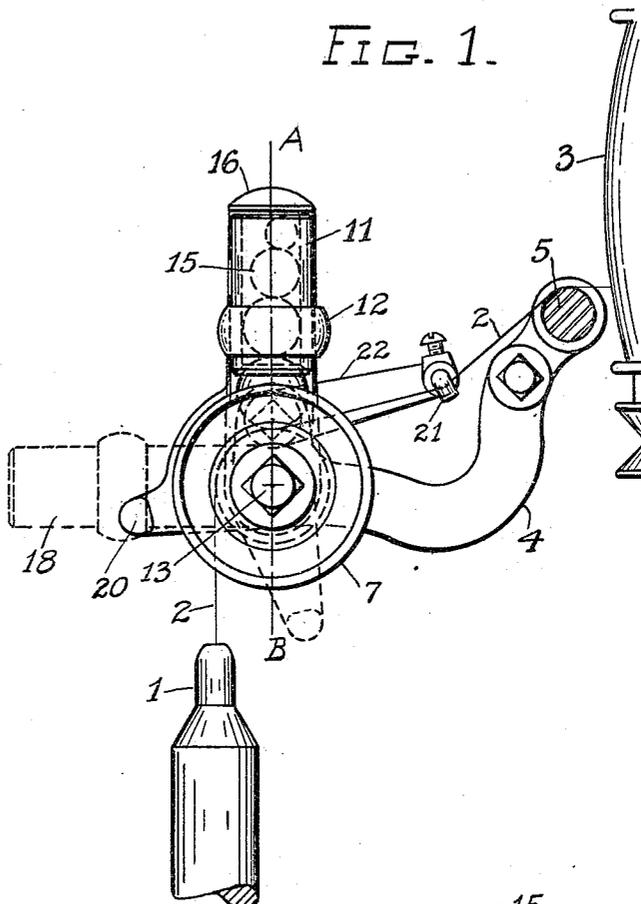


FIG. 4.

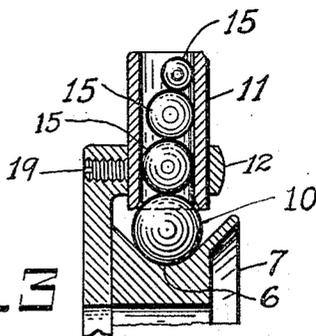


FIG. 3

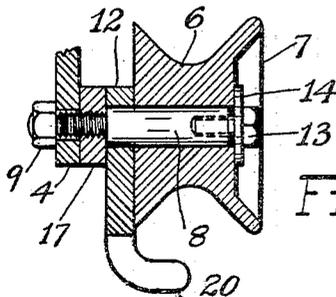


FIG. 5

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# UNITED STATES PATENT OFFICE.

LEON H. HORNER, OF WHITINSVILLE, MASSACHUSETTS, ASSIGNOR TO WHITIN MACHINE WORKS, OF WHITINSVILLE, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

## TENSION DEVICE.

1,298,044.

Specification of Letters Patent. Patented Mar. 25, 1919.

Application filed August 20, 1918. Serial No. 250,733.

*To all whom it may concern:*

Be it known that I, LEON H. HORNER, a citizen of the United States, residing at Whitinsville, in the county of Worcester and Commonwealth of Massachusetts, have invented certain new and useful Improvements in Tension Devices, of which the following is a specification.

My invention relates to tension devices for yarn and thread winding machines.

The object of the invention is to provide a device in which the tension on the yarn may be regulated with precision and any desired tension maintained without subjecting the yarn to undue strains.

The invention is fully set forth in the following specification, illustrated by the accompanying drawings, in which:

Figure 1 is an end view of my tension device showing its position with relation to yarn container and the spool being wound.

Fig. 2 is an end view of the same.

Fig. 3 is a partial vertical sectional view taken on line AB of Fig. 1.

Fig. 4 is an end view of the yarn guide.

Fig. 5 is a partial sectional top plan view taken on line XY of Fig. 2.

Referring more particularly to the several views of the drawings, wherein like characters of reference designate corresponding parts, 1 indicates the yarn container or bobbin, 2 the yarn, 3 the spool on which the yarn is being wound, 4 the tension device supporting member which is in an adjustable relation with the yarn traverse rod 5. The yarn 2 in the process of being wound on the spool 3 is drawn from the bobbin 1 over the grooved periphery 6 of the tension wheel 7 which is adjustably mounted on the stud 8. The stud 8 is fixedly held in the lower end of the tension supporting member 4. Tension is imparted to the yarn by the weight of the ball 10 which runs freely in the groove of the tension wheel, the ball and groove having the same radius of curvature. The ball is held in position on top of the tension wheel 7 by the tubular holder 11 the lower opening of which encompasses the top of the ball in such a manner that freedom of rotation is not restricted. The holder is supported normally in a vertical position above the center axis of the tension wheel in the bracket 12 which is in a swinging relation with the stud 8 and is fixed

thereon by the clamping effect of the bolt 13 and washer 14 against the hub of the wheel 7. The holder is adjustably mounted in the bracket 12 and is fixed in any desired position therein by means of the set-screw 19.

Additional tension may be imparted to the yarn passing between the ball 10 and groove 6 by placing one or more balls 15 on top of the ball 10, said balls being freely held inside of the tubular holder 11. To prevent accidental displacement of the auxiliary balls a cap 16 is maintained above the upper opening of the tubular holder. The cap is in a fixed relation to the supporting bracket 4 and is preferably supported at its lower end 17 by being threaded on to the stud 8 acting as a collar for the stud for engagement with the supporting bracket 4.

Whenever it is desired to remove the balls it is easily accomplished by loosening the bolt 13 when the tubular holder may be swung to the position 18 as shown in dotted lines in Fig. 1.

To prevent the entanglement of the yarn while being drawn over the tension wheel a guard 20 is stationed between the side of the tension wheel and the cap member 17. Preferably this guard is integral with the bracket 12.

To control the yarn in its passage from the tension wheel to the traverse rod 5 it passes under the guide wire 21 which is adjustably mounted in an arm 22 secured to the supporting member 4 by the bolt 23.

The invention is not to be restricted to the details of construction herein mentioned as such may be varied if necessary or desired, without departing from the scope of the invention as defined by the appending claims.

I claim:—

1. A tension device comprising a wheel with a grooved periphery, a ball supported in the groove, and means for retaining the ball in the groove.

2. A tension device comprising a member provided with a grooved surface, a ball supported in the groove, a holder the lower end of which encompasses the top sector of the ball, and means for maintaining the holder in an adjustable relation with the ball.

3. A tension device comprising a member provided with a grooved surface, a ball supported in the groove, a tubular holder for the ball, auxiliary balls loosely confined in

the holder for exerting additional pressure on the first ball, a bracket supporting the holder, and a cap for the holder.

5 4. A tension device comprising a member with a grooved surface, a ball supported in the groove, means for retaining the ball in the groove, and means for exerting pressure on the ball whereby additional tension to the yarn is obtained.

10 5. A tension device comprising a member provided with a grooved surface, a ball supported in the groove, a tubular holder for the ball adjustably mounted above the ball, and one or more auxiliary balls loosely confined in the holder and superimposed on the  
15 first ball thus exerting additional tension to the yarn.

6. A tension device comprising a wheel with a grooved periphery, a ball supported

in the groove, a ball holder the lower end 20 of which encompasses the top sector of the ball and a bracket in which the holder is adjustably mounted and is maintained in a swinging relation with the wheel.

7. A tension device comprising a bracket, 25 a stud fixed to the bracket, a grooved wheel adjustably mounted on the stud, a ball supported in the groove, a tubular holder for the ball adjustably mounted above the ball, a swinging bracket maintaining the holder 30 concentric with the grooved wheel, one or more balls, loosely confined in the tubular holder and superimposed on the first ball, and a cap for retaining the auxiliary balls in the holder. 35

In testimony whereof I have signed this specification.

LEON H. HORNER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."