June 13, 1933. A. A. GOBEILLE 1,914,014

WARPING CREEL SPOOL TENSION DEVICE

Filed Jan. 29, 1931

Fig. 1.

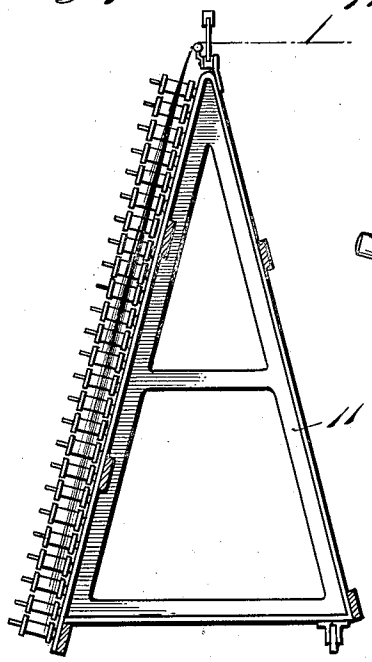


Fig. 3.

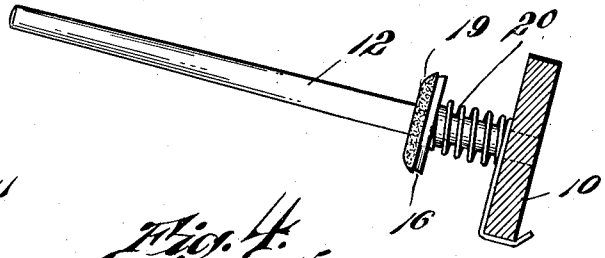


Fig. 4.

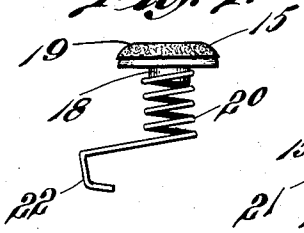


Fig. 5.

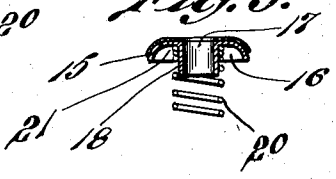
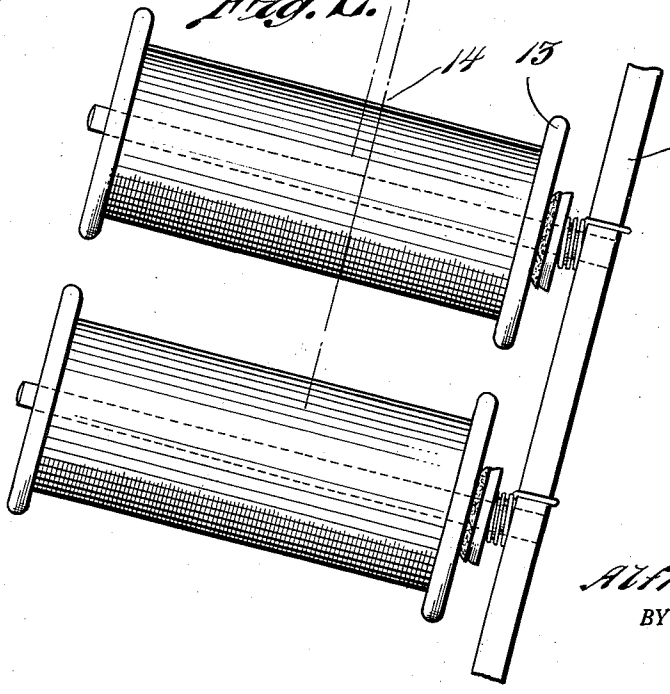


Fig. 2.



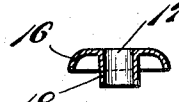


Fig. 6.

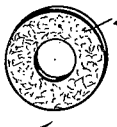


Fig. 7.

INVENTOR.
Alfred A. Gobeille
BY Barlow & Barlow
ATTORNEYS.

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UNITED STATES PATENT OFFICE

ALFRED A. GOBEILLE, OF SHANNOCK, RHODE ISLAND

WARPING CREEL SPOOL TENSION DEVICE

Application filed January 29, 1931. Serial No. 512,017.

This invention relates to a device for applying tension to a spool or the like, and is particularly adapted for use in connection with a silk warping creel; and has for its object the running of raw silk in a dry condition with greater efficiency.

Another object of the invention is to prevent the flying or sagging of certain threads in warping, which is caused by uneven tension applied to the various spools from which the warp threads are led.

Another object of the invention is the provision of a tension which will permit stopping and starting of the unwinding action of the threads at greater speeds without slackening and flying of the threads thereby permitting increased production in the warp winding.

A further object of the invention is to prevent breaking of the warp threads upon starting and permitting the starting at a higher rate of speed than where the device is not in use.

A still further object of the invention is the provision of a device which will engage and follow the spool in its movement along the spindle to continue the tension applied thereto.

With these and other objects and advantageous features in view, the invention consists of a novel arrangement of parts more fully disclosed in the detailed description following, in conjunction with the accompanying drawing, and more particularly set forth in the appended claims.

In the drawing:

Fig. 1 is an end elevation of a warping creel;

Fig. 2 is a similar elevation on a larger scale of two spools mounted upon their spindles on the spindle rail of a warping creel with my improved tension device in working position;

Fig. 3 is a sectional view through the rail showing the spindle extending therefrom and my improved tension device in position with the spool removed from the spindle;

Fig. 4 is a side elevation of the tension device removed from operating position;

Fig. 5 is a sectional view thereof;

Fig. 6 is a sectional view of the button member;

Fig. 7 is a perspective view of the resilient felt pad mounted on the button member for engaging the spool.

This device is especially adapted for use in preparing silk or rayon for weaving, although it may be used in some cases upon other similar textile materials upon which it is adapted to be used. I will, however, describe its use in connection with silk or rayon which is not considered as limiting the application of the invention to use in this connection.

In preparing silk or rayon for weaving, the yarn is drawn to the warping machine from the spools mounted on the spindles of a warping creel. These spools usually rest upon a porcelain button secured about the spindle which extends from the rail and which are held fixedly in place at the base thereof.

In drawing the yarn rapidly from the spools, the same may be rotated at a rather high rate of speed and should the bore of the spool through which the spindle extends become irregular, the spool will lift from the porcelain button upon which it rests when traveling at a relatively slow rotation or when stopped, thus allowing the same a much freer action by reason of the lack of friction supplied by the base of the spool sliding over the porcelain button. This permits the spool to run ahead of its companion spools, causing a slack in the yarn which is drawn from this spool relative to its companion spools, and an uneven tension on the warp threads and a consequent imperfection in the texture of the fabric woven therefrom.

Further, in the handling of silk, a sort of static electricity in the warp is formed causing the silk to become exceedingly ungovernable, and if proper tension is not applied a flying of the ends, which has led to the use of silk in a dampened or wet condition. This dampening or wetting, however, is exceedingly undesirable as should the silk not be all of the same dampened or wet condition streaks will occur in the fabric, and in order to eliminate the undesirable results caused by this condition, and a greater con-

trol of the dry raw silk, I have provided a tension which engages the bottom of the spool and will follow the spool as it lifts due to its rotating action, thus insuring tension at all times on the spool and at the same time the yielding action which I use will cause the tension to be sufficiently flexible so as to permit the spool to yield upon a quick start or pull of the yarn upon the spool to prevent breaking thereof and will likewise upon a quick stop expend a certain amount of energy in the spring mounting to rotate the tension means to wind up the spool on the yarn which is being drawn therefrom to maintain this tension when stopping, thus permitting quicker stopping of the machine from a higher rate of speed when desired; 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 rail of a warping creel frame 11 from which extends a plurality of spindles 12 in the desired spaced relation, and upon each of which spindles there is mounted a spool 13 having yarn 14 wound thereon in package form and which is led from each spool to the warping machine. Beneath each spool 13, I have mounted a button member 15 consisting of an annular head 16 having a rounded top and with an opening 17 therein from which extends a collar 18. Upon this member a felt pad or other suitable soft engaging surface 19 is mounted to receive the lower head of the spool 13. This button member 15 is supported by means of a helical coil spring 20 having one end 21 secured to the collar 18 and its other end 22 extending laterally from the several helical coils thereof in hook form to be anchored by embracing the rail 10 to hold the same against rotative action.

The spool and its package when placed upon the spindle rests upon the button 15 tending to compress the spring 20 and as it is rotated the natural weight of the spool against the button will cause a friction or tension thereon. Should the spool ride up the spindle during rotation, the helical coil spring 20 will cause the button to follow the same along the spindle and apply tension thereto.

The spring acts in a quick starting of the warping machine to permit the spool and its button upon which it is supported to move slightly to place rotary tension upon the spring which will prevent the yarn from breaking and which would otherwise break if it were to be drawn from the spools without any give such as this spring supplies. Thus, as the tension yields or gives upon application of this force, breaking of the thread is prevented.

The spring also has a further function of being tensioned by a rotary movement of the button about the spindle due to the friction of the spool slipping thereover, and as the spools are brought to a stop, this rotary tension of the button will tend to wind up the yarn which is being drawn from the spool, thus keeping it under a substantial tension and preventing a slackening thereof or running ahead of the spool when stopping.

The tensions applied to each of the spools of the creel causes the different spools of the creel to be under substantially the same tension at all times and the yarn from each of the spools is kept taut, thus permitting even warping from the plurality of spools supported on the creel.

While I have described certain construction forms which embody the principles of my invention, it is obvious that other desired changes in arrangement may be made within the spirit and the scope of the invention as defined in the appended claims.

I claim:

1. In combination, a spindle, a spool rotatable thereon, said spool being free to move toward the free end of said spindle when rotating and resilient means frictioning against the lower end of said spool to retard its rotary motion about said spindle.

2. In combination, a spindle, a spool rotatable thereon, said spool being free to move toward the free end of said spindle when rotating and resilient means frictioning against the lower end of said spool to retard its rotary motion about said spindle, but permitting yielding rotary motion thereof about its axis.

3. In combination, a spindle, a spool rotatable thereon, and resilient means frictioning against the lower end of said spool to retard its rotary motion about said spindle, said means including a button and a spring secured to said button, whereby a limited reverse rotary movement of the spool about its axis is imparted to the spool upon stopping.

4. In combination, a spindle, a spool rotatable thereon, said spool being free to move toward the free end of said spindle when rotating and resilient means frictioning against the lower end of said spool to retard its rotary motion about said spindle and causing a limited reverse rotary movement of the spool about its axis upon stopping of the spool, said tensioning means engaging said spool and rising with the spool to maintain engagement therewith.

5. In combination, a spindle, a spool rotatable thereon, said spool being free to move toward the free end of said spindle when rotating a button member upon which the spool rests, and resilient means supporting said member and the spool mounted thereon.

6. In combination, a spindle, a spool rotatable thereon, said spool being free to move

toward the free end of said spindle when rotating a button member upon which the spool rests, a coiled spring about said spindle secured at one end to said member and located beneath the same, means for securing the other end of said spring against rotation thereof about said spindle, whereby said button member will follow said spool upon lifting.

7. In combination, a spindle rail, a plurality of upwardly inclined spindles on said rail, spools on said spindles, said spools being free to rise when rotating a button member on each spindle upon which each spool rests, and a spring supporting each member to cause the same to yieldingly engage the spool and prevent uneven discharge of the yarn.

8. In combination, a spindle rail, a plurality of upwardly inclined spindles on said rail, a button member on each spindle, spools engaging said button members on said spindles, said spools being free to rise on said spindles when rotating a coiled spring beneath each button member having one end secured thereto and the other end secured to said rail to yieldingly support each member in engagement with said spool and prevent uneven discharge of the yarn from said spools.

In testimony whereof I affix my signature.

ALFRED A. GOBEILLE.