

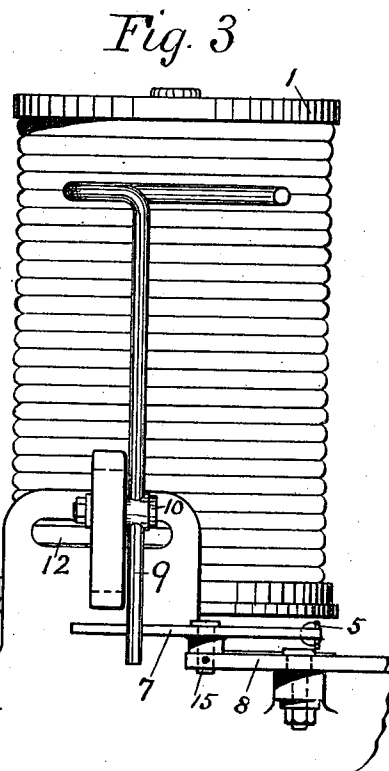
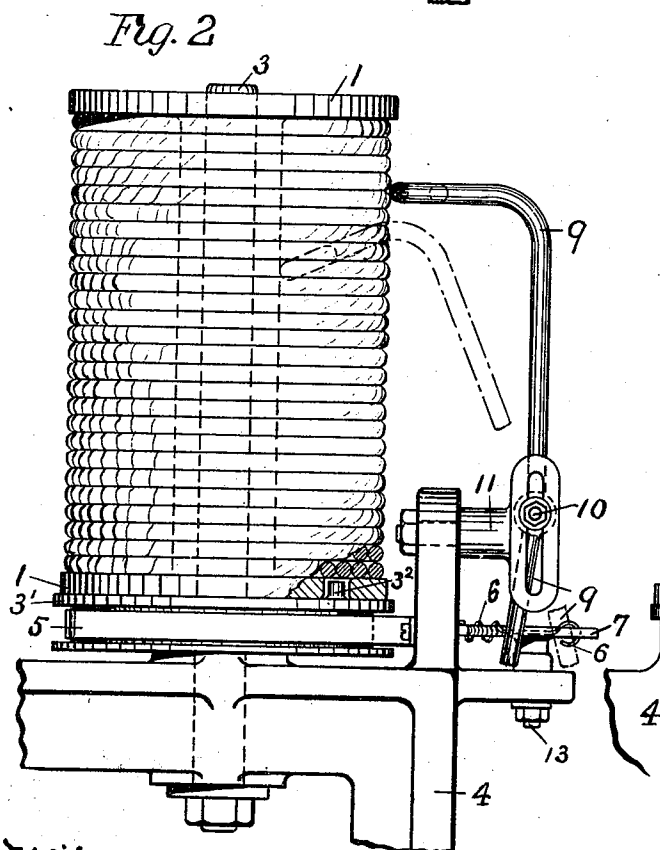
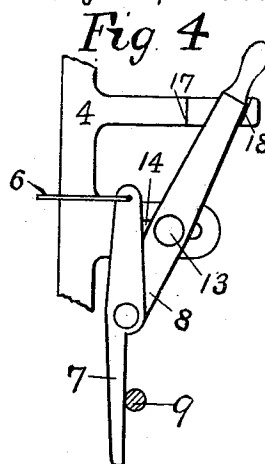
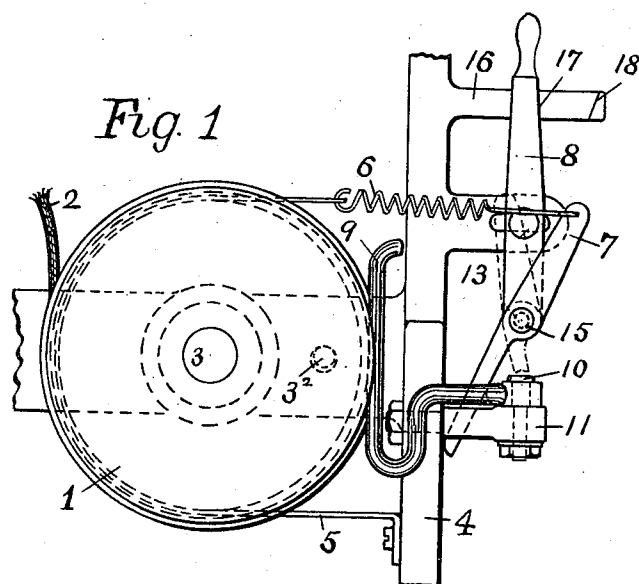
(No Model.)

P. HETZEL.

TENSION REGULATOR FOR TWINE BOBBINS.

No. 501,187.

Patented July 11, 1893.



Witnesses:

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UNITED STATES PATENT OFFICE.

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TENSION-REGULATOR FOR TWINE-BOBBINS.

SPECIFICATION forming part of Letters Patent No. 501,187, dated July 11, 1893.

Application filed August 22, 1892. Serial No. 443,792. (No model.)

To all whom it may concern:

Be it known that I, PETER HETZEL, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Tension-Regulators for Twine-Bobbins, of which the following is a full, clear, and exact specification.

This invention relates to that class of machinery which is employed in the balling of twine or yarn, and more particularly to means for producing hard and evenly wound balls; the object of the invention being to provide means for obtaining any desired degree of tension of the twine while it is being wound upon the ball, and for maintaining that degree of tension whether the twine is drawn from a full bobbin or from one nearly empty.

Figures 1, 2 and 3 of the drawings are a plan, a front, and a side view respectively of that portion of a machine embodying my invention. Fig. 4 is a plan view showing some of the parts in the position occupied by them when it is desired to slacken or altogether remove the tension.

The numeral 1 represents a filled spool or bobbin such as those upon which the twine is ordinarily brought to the balling machine. The leading end, 2, of the twine is passed through suitable guides to the fliers, which wind it upon the ball; but as those guides and fliers form no part of the present invention, they are not herein shown. The bobbin has a hole longitudinally through its center, and is placed upon the spindle, 3, resting upon the flange 3' of the spindle. A projection 3² enters a hole in the flange of the bobbin and serves as a means of positive engagement between them. The spindle turns freely in its bearing in the frame 4, of the machine, and a portion of its flange 3' is turned down to receive a brake band, 5, one end of which is fixed to the frame 4. The other end of the band is connected by a spring, 6, to one end of the tension lever, 7, which is pivoted at or near its center upon a stud, 15, in the hand lever, 8. The tension lever, 7, from its pivot to the end opposite its spring end is adapted to engage with the lower end of the regulator arm, 9, which is pivoted upon the stud 10. That stud may be clamped at any position in

its slot in the bracket 11, and that bracket is also capable of horizontal adjustment in its slot, 12, in the frame 4. The upper end of the regulator arm is bent and extended so as to adapt it to engage with the bobbin in all positions to which the bracket 11 may be adjusted. The hand lever 8 is pivoted on a stud, 13, which is clamped in a slot, 14, in the frame 4, and has fixed in one end the stud 15. The opposite end of the lever 8 rests upon the extension, 16, of the frame 4 and is retained at the positions shown in Figs. 1 and 4 by the notches 17 and 18 respectively. When in the position shown in Fig. 1 the spring end of the lever 7 is carried outward and serves to put tension onto the spring 6 and brake band 5, and that tension is removed by placing the lever in the position shown in Fig. 4. Thus the tension may quickly be applied or removed without disturbing the adjustment of the degree of tension. The desired degree of tension is obtained by adjustment of the studs 10 and 13 and the bracket 11 in their respective slots. The greatest degree of tension is required when the bobbin is full and vice versa. With a full bobbin in position the stud 13 is adjusted until the desired degree of tension is communicated to the twine. The upper end of the arm 9 is pressed against the twine by the action of the tension lever 7 against its lower end, and as the twine is drawn off from the bobbin the arm 9 approaches the dot-and-dash position shown in Fig. 2, thereby allowing the tension lever 7 to approach its dot-and-dash position shown in Fig. 1, thus gradually lessening the tension of the spring 6; the amount of angular motion of the tension lever 7 being the measure of that decrease of tension for a given diminution of size of the bobbin. If this tension is found to decrease too rapidly, the stud 10 is adjusted downward in its slot, thus reducing the amount of motion of the arm 9 at its point of contact with the lever 7, and thereby reducing the angular motion of that arm, so that the tension of the spring 6 is reduced more slowly. If, on the other hand, a more rapid decrease of tension is desired, the stud 10 is adjusted upward in its slot thus increasing the angular motion of the lever 7.

In practice it is sometimes found necessary

to utilize a particular part of the angular motion of the lever 7, and to do this it is found desirable to adjust the bracket 11 horizontally toward or from the pivot 15, using this adjustment instead of, or in addition to, one or both of the other adjustments.

It is obvious that this device may be tilted at any angle, or that levers of the second kind may be adapted and substituted for those of the first kind herein shown without departing from the spirit and substance of this invention.

I claim as my invention—

1. A tension regulator for bobbin spindles, consisting of a spring brake band, an oscillating lever, an arm adapted to bear against the twine and against the lever, and a bracket upon which that arm is pivoted, the bracket being adapted to adjust toward or from the pivot of the oscillating lever; substantially as described and for the purpose specified.

2. A tension regulator for bobbin spindles, consisting of a spring brake band, an oscillating lever, an arm adapted to be pressed

against the twine by the action of the lever and spring, an adjustable pivot for the arm and an adjustable bracket for the pivot, by means of which the relative angular movements of the arm and the lever may be varied; all substantially as described.

3. The combination of a regulator arm, a brake band, its lever 7 attached thereto, and a hand lever upon which the lever 7 is pivoted, all arranged and operating to carry the lever 7 into and out of the position in which it engages with the regulator arm; substantially as described.

4. A regulator arm, a brake band, its lever 7 attached thereto, a hand lever upon which the lever 7 is pivoted, an adjustable pivot for the hand lever, and an extension provided with the stop notches 17 and 18; substantially as described.

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Witnesses:

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