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TENSION REGULATOR FOR SELVAGE SPOOLS

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FIG. 1.

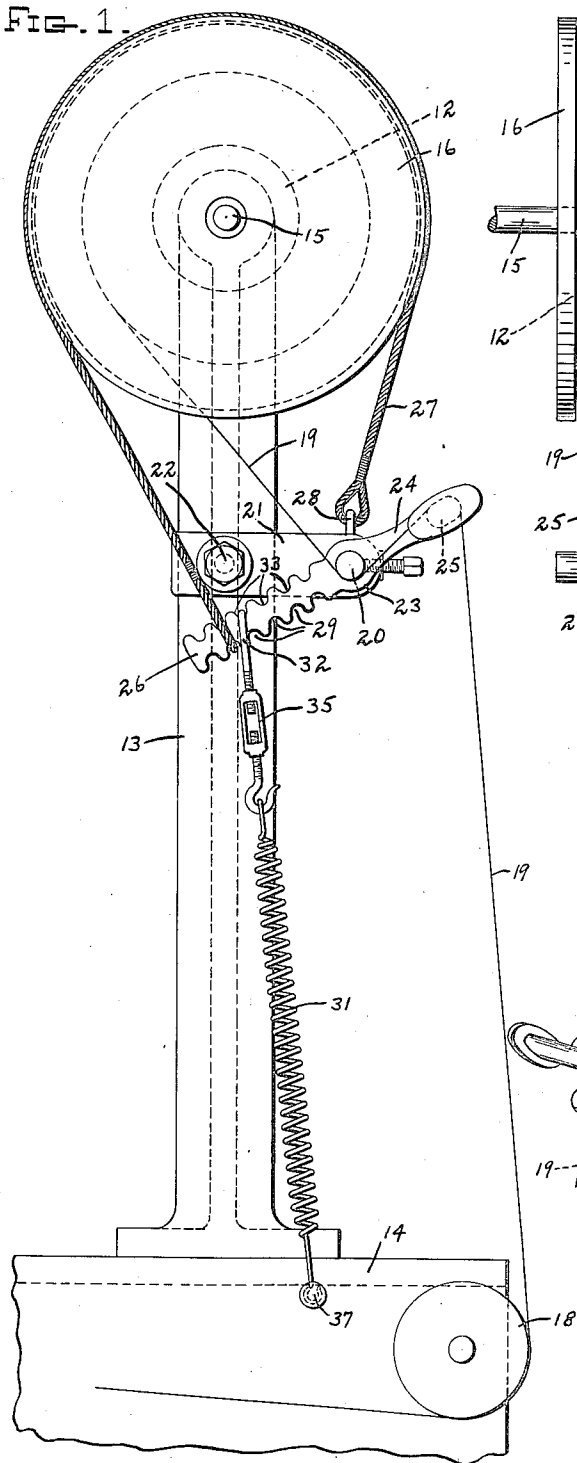


FIG. 2.

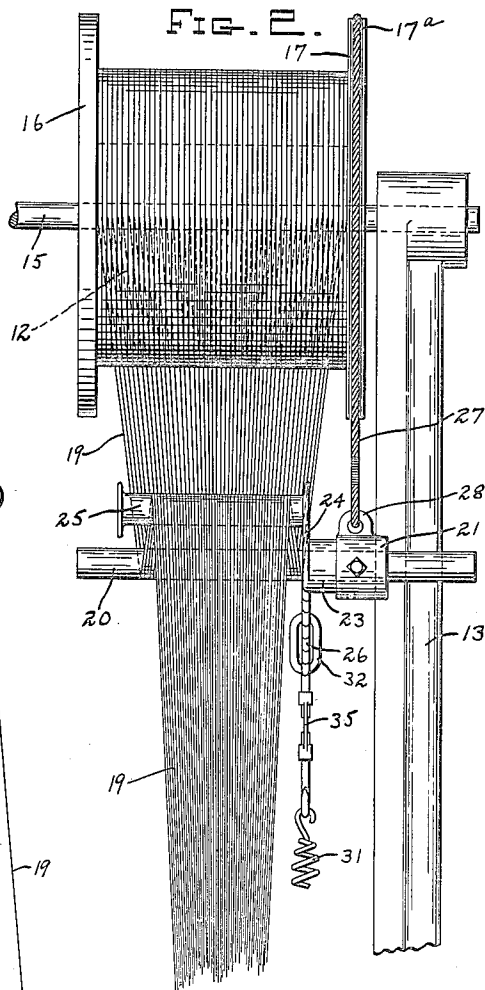
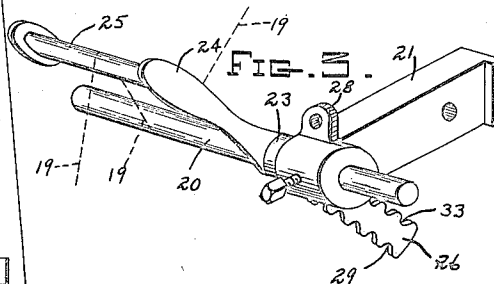


FIG. 3.



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TENSION REGULATOR FOR SELVAGE SPOOLS.

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To all whom it may concern:

Be it known that I, CHARLES F. LAVALLE, a citizen of the United States, residing at Newmarket, in the county of Rockingham and State of New Hampshire, have invented new and useful Improvements in Tension Regulators for Selvage Spools, of which the following is a specification.

This invention relates chiefly to selvage spools on which selvage warp threads are accumulated, and from which they are drawn to the weaving mechanism of a loom, the threads passing from the selvage spool under a whip roll spaced therefrom, so that elongated stretches of the threads extend between the spool and the roll. The threads are somewhat hygroscopic, and are caused to elongate and contract by the variations of atmospheric moisture which occur in a weaving-room.

The chief object of the invention is to provide tension-regulating means between the spool and the whip roll, adapted to automatically compensate for variations in the length of the threads, and maintain the same uniformly tensioned.

Another object is to provide means for conveniently varying the tensioning force or pressure in accordance with the number of threads.

The invention consists in the improvements hereinafter described and claimed.

Of the accompanying drawings forming a part of this specification,—

Figure 1 is a side elevation, showing ends of a selvage spool and of a whip roll in their usual relative positions, and tension-applying and regulating mechanism embodying the invention.

Figure 2 is a front elevation of the same, showing a side of the spool and omitting the roll.

Figure 3 is a fragmentary perspective view.

The same reference characters indicate the same parts in all of the figures.

12 represents a selvage spool of ordinary form, adapted to hold a winding composed of a set of selvage warp threads, and supported in the usual relation to the weaving mechanism of a loom by means such as a standard 13, fixed to a portion 14 of the loom frame, and a horizontal stud 15, fixed to the standard and constituting an axis on which the spool is adapted to rotate. The winding is confined on the barrel of the

spool by the usual spool heads 16 and 17, the latter being preferably provided with a peripheral groove 17^a. 18 represents the usual whip roll journaled in bearings on the loom frame and spaced from the spool, and arranged to guide the threads on their way from the spool to the weaving mechanism, so that thread stretches 19 extend from the spool to the roll.

20 represents a fixed thread bearing, which is preferably a cylindrical rod, and is parallel with the axis of the spool. Said bearing is preferably supported by a fixed bracket 21, attached, as by a bolt 22, to the standard 13.

The hub 23 of a two-armed lever is adapted to turn freely on the bearing 20. Said lever includes an outer arm 24, having a member 25, parallel with the bearing 20, and an inner arm 26, in alinement with the outer arm. The lever is adapted to oscillate on the fixed bearing 20, and the member 25 carried by the outer arm of the lever constitutes a movable thread bearing. The movable thread bearing 25, and the inner lever arm 26, are rigidly connected, and are at opposite sides of the fixed thread bearing 20, so that they are movable simultaneously in opposite directions, as herein-after described.

27 represents a brake band, which may be a length of fibrous cord, and is attached at its outer end to a fixed support, such as an ear 28 on the bracket 21. From this support the band extends over the grooved spool head 17, and from thence to the inner lever arm 26, with which it is engaged, preferably by a loop formed on the inner end of the band engaging one of a series of notches 29 in the lower edge of said arm.

Connected with the lever arm 26 is a yielding pressure-applying means, exerting a downward pull or pressure on the said arm and on the brake band, and at the same time exerting upward pressure on the outer lever arm 24 and the movable bearing 25. I prefer to embody said yielding pressure-applying means in a tension spring 31, connected at one end with a fixed support, as a stud 37 on the frame portion 14, and at the other end with the lever arm 26, as by an eye 32, embracing said arm, and engaged with one of a series of notches 33 in the upper edge thereof.

The arrangement is such that the movable bearing 25 is held by the spring in position

to deflect the thread stretches, 19 from a straight course between the spool and the roll 18, and dispose the portions of the stretches between the bearing 20 and the roll 18 in the form of bights. At the same time, the brake band is pressed by the spring against the grooved periphery of the spool head 17. Rotation, of the spool is, therefore, retarded, and the stretches 19 are tensioned partly by said retardation, and partly by the deflection of the stretches by the movable bearing 25.

In case the stretches are caused to vary in length by variations of atmospheric moisture, the described mechanism automatically compensates for the variation. When the stretches are contracted by shrinkage, the movable bearing 25 is depressed and slightly decreases the depth of the stretch bights formed thereby. At the same time, the inner lever arm 26 is raised and slightly decreases the pressure of the brake band on the spool. When the stretches are elongated, the movable bearing 25 rises and increases the depth of the bights, and the lever arm 26, at the same time, is depressed and increases the pressure of the brake band on the spool.

It will be seen that a variation in the length of the brake band 27, due to the same cause, is also automatically compensated for, the inner arm 26 moving upward, as the band contracts, and downward as the band elongates, so that no material variation in the pressure of the band on the spool head is caused by the elongation, or by the contraction of the band.

The upper notches 33 permit the spring 31 to be connected with the inner lever arm at points at different distances from the fulcrum of the lever, according to the number of threads, it being desirable to connect the spring at a greater distance from the fulcrum, when the number of threads is relatively large, than when the number is smaller. The lower notches 29 permit the brake band to be connected with the inner lever arm, at different points as may be required by the location of the spring connection.

I preferably provide means for varying the downward pressure of the spring on the inner lever arm by employing as the connection between the spring and the lever arm, an adjustable device which may be a turn buckle 35, on one member of which the eye 32 is formed. Adjustments of the turn buckle vary the tension of the spring.

The described tension-applying and regulating mechanism is adapted to be quickly and conveniently applied to and removed from an ordinary loom, it being necessary only to provide the standard 13 with a hole to receive the bracket-attaching bolt 22, and to provide the frame portion 14 with

a stud or pin 37, as an anchor for the spring 31.

It is obvious that the invention may be used in connection with any spool which stores and supplies threads or filaments.

I claim:

1. The combination with a thread spool, and a roll spaced from the spool, and arranged to guide threads passing from the spool, so that thread stretches extend from the spool to the roll; of a tension-applying and regulating mechanism, comprising a fixed thread bearing between the spool and the roll, an oscillatory two-armed lever mounted on said fixed bearing and including an outer arm having a movable thread bearing substantially parallel with said fixed bearing, and an inner arm, said movable bearing and inner arm being at opposite sides of the fixed bearing and rigidly connected for simultaneous movement in opposite directions, a hand brake attached at one end to a fixed support, and extending from said support over a portion of the spool, said band being connected at its opposite end with the inner lever arm; and yielding pressure means connected with said inner arm, and normally holding the said movable bearing in position to form bights in the said thread stretches, said means being adapted to exert pressure simultaneously on the brake band in one direction, and on the movable thread bearing in the opposite direction, to maintain the said thread stretches under tension, and compensate for the elongation and shrinkage of the thread and of the brake band, caused by variations of atmospheric moisture.

2. The combination with a thread spool and a thread-guiding roll spaced therefrom, of a tension-applying and regulating mechanism substantially as specified by claim 1, the inner lever arm of said mechanism being provided with means for varying the points of connection therewith of the said brake band, and of the said yielding pressure means.

3. The combination with a thread spool and a thread-guiding roll spaced therefrom, of a tension-applying and regulating mechanism substantially as specified by claim 1, the yielding pressure means of said mechanism being embodied in a tension spring connected at one end with a fixed support, and at the opposite end with the said inner lever arm, and provided with means for varying its pressure on the inner lever arm.

4. The combination with a thread spool, a fixed support therefor, and a roll spaced from the spool, and arranged to guide threads passing from the spool to the roll; of a tension-applying and regulating mechanism, comprising a bracket attached to said fixed support adjacent to the spool,

a fixed thread bearing attached to said bracket, a two-armed lever adapted to oscillate on said bearing, and including an outer arm having a movable thread bearing substantially parallel with the fixed bearing, and an inner arm, said movable bearing and inner arm being at opposite sides of the fixed bearing and rigidly connected for simultaneous movement in opposite directions, a brake band attached at one end to said bracket and extending therefrom over a portion of the spool, the opposite end of said band being connected with the inner lever arm, and a tension spring connected at one end with the said inner arm, and at the opposite end with said support, and normally holding said movable bearing in position to form bights in said thread stretches, and said inner arm in position to press the brake band against the spool.

In testimony whereof I have affixed my signature.

CHARLES F. LAVALLE.