

Feb. 10, 1925.

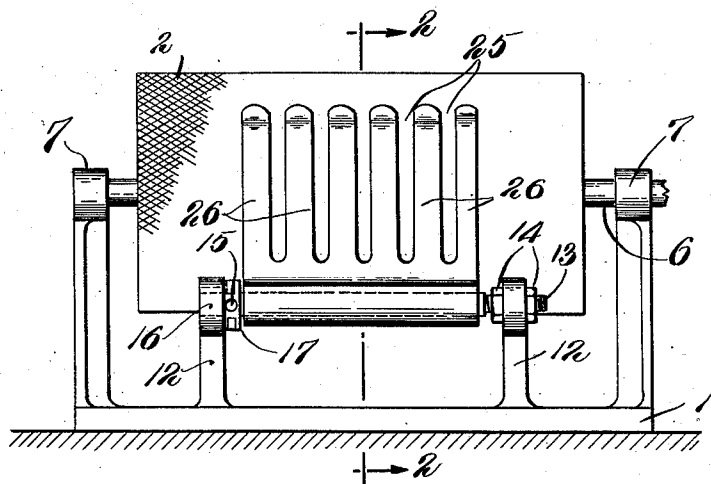
1,526,087

A. PETERSEN

TENSION DEVICE

Filed Dec. 12. 1923

Fig. 1



9. *Fig. 2*

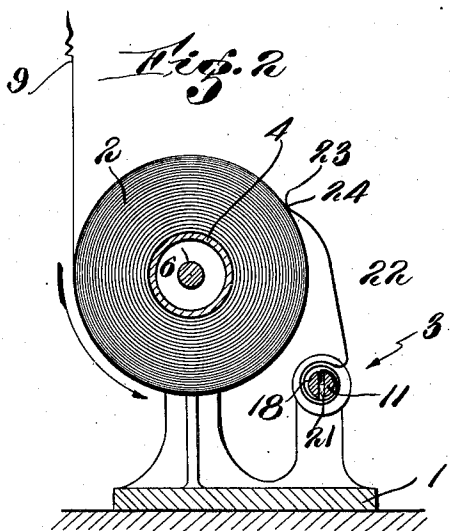
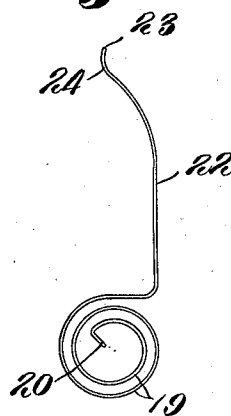


Fig. 3



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UNITED STATES PATENT OFFICE.

ANKER PETERSEN, OF BOSTON, MASSACHUSETTS.

TENSION DEVICE.

Application filed December 12, 1923. Serial No. 680,134.

To all whom it may concern:

Be it known that I, ANKER PETERSEN, a citizen of the United States of America, and resident of Boston, in the county of Suffolk and State of Massachusetts, have invented new and useful Improvements in Tension Devices, of which the following is a specification.

This invention pertains to yarn or thread tensioning devices and relates more particularly to a tension device wherein the yarn is tensioned by frictional engagement of a contact element with the peripheral surface of the thread mass being wound or unwound.

The device forming the present invention is of general utility although possibly finding its widest application in the textile industry, as for example, in connection with spoolers, winders, braiding machines, knitting machines, etc. and the principal object of the invention is to provide a tension device of simple and durable construction which may readily be applied to existing machines without substantial change and having capability of automatic adjustment to compensate for the varying diameter of the yarn mass as well as manual adjustment to adapt it to varying conditions of use.

A preferred embodiment of the present invention is illustrated by the accompanying drawings, wherein:

Fig. 1 is a vertical longitudinal elevation of the device assembled in operative position with respect to a thread mass;

Fig. 2 is a vertical cross section of the same along line 2—2 of Fig. 1; and

Fig. 3 is a side view of the tensioning device per se.

Referring to Fig. 1, a base 1 is shown upon which are mounted the supports for the yarn mass 2 and a tensioning device 3. The tensioning device comprises a member or members 22 adapted to press resiliently against the yarn mass.

The yarn mass is shown as supported by a tube 4 mounted upon the horizontal winding spindle 6 which is rotatably mounted in the stationary bearings 7. The free end of the yarn mass is indicated at 9. The tension upon the end 9 may be upward in case the yarn is being unwound from the mass, or downward when the mass is rotated to wind the yarn thereon.

The tension device 3 is arranged at a distance from the axis of the yarn mass 2 de-

pending upon the size of the latter. In the preferred form, the tension device comprises an arbor 11 mounted in bearings provided in the two supporting brackets 12. The arbor 11 is threaded at one end as indicated at 13 for engagement by clamping nuts 14 by means of which it may be secured in adjusted position. At its other end and on the inner side of bearing 16 the arbor is provided with a collar 17 having one or more sockets or radial holes 15.

A wide, spirally-wound spring 18 is mounted upon the arbor 11. This spring is made from a piece of resilient material such as spring steel, having a plurality of coils, a radially disposed flange member 20 at its inner end, and a contact member 22 at its outer end. The member 20 fits snugly into a longitudinal slot 21 in the arbor 11. The member 22 is preferably integral with the coiled portion of the spring, and is given a tangential or rearwardly disposed position with respect to the outer convolution of the coiled portion. Its outer end 23 is curved sharply upward forming a smooth rounded surface 24 for contact with the material upon the reel. Slots 25 may be cut in the portion 22 of the spring, if desired, thus providing a plurality of separate fingers 26, each having an individual contact portion in the rounded surface 24.

The spring 18, the part 22, and the radial flange member 20 are preferably made integral with each other, as by stamping the entire device from a sheet of steel, the stamping then being shaped and suitably tempered.

From the foregoing description the operation of the device will be readily understood. The nuts 14 having been loosened, a lever is inserted into one of the sockets 15 and arbor 11 is turned until the rounded surfaces 24 of the fingers 26 bear with sufficient pressure against the peripheral surface of the yarn mass. The nuts 14 are then tightened, thus securing the arbor 11 against subsequent rotation.

The yarn mass may now be rotated by any suitable means for winding or unwinding the yarn as desired. The contact of surfaces 24 will tend to resist the rotation by frictional engagement with the peripheral surface of the yarn mass, but will not wear or catch the strands. Moreover, as the size of the yarn mass increases or decreases, the spiral spring will accommodate itself there-

to by expansion or contraction, and continue to exert a relatively constant pressure there-against.

When the member 22 is provided with slots 25 as shown in Fig. 1, the separate fingers 26 which are thus formed will individually press against the yarn mass and will be separately affected by any irregularity in its surface, without changing the position or tension of the others. In this manner, uniform pressure is exerted upon the yarn mass and hence the tensioning effect upon the thread will be kept essentially constant. In case of a substantial change in the normal size of the yarn mass to be wound or unwound, manual adjustment may be made as above described while the range of the automatic adjustment of the device may be increased by employing a spring having a greater number of coils. The width of the spring may be increased when heavier or wider rolls are being employed upon the reel.

I claim:

1. A device for tensioning thread masses and the like comprising a flat spiral spring containing a plurality of coils, a member integral with the inner end of said spring for securing the same in fixed position and a member integral with the outer end of said spring provided with a wide bearing surface suitable for pressure contact against said thread mass.

2. A device for tensioning thread masses and the like, comprising a flat spiral spring provided at its outer or free end with an integral portion having a wide curved surface suitable for contact with the thread mass, and supporting means engaging the inner end of the spring.

3. A device for tensioning thread masses comprising a piece of resilient material having a portion thereof disposed to form a flat spiral coil, the inner end of the coil terminating in a substantially radial flange, and a portion integral with the outer end of the coil and substantially tangent to the outer convolution of the coil, said latter portion having a contact surface for engagement with the thread mass.

4. A device for tensioning thread masses

comprising a wide piece of resilient material having an integral spiral coil and a portion substantially tangent to the outer convolution of the coil, said latter portion being divided by parallel slots to form a series of fingers, each finger having a contact surface for engagement with the thread mass.

5. A device for tensioning yarn masses or the like comprising a spindle, an arbor positioned adjacent to the spindle and substantially parallel thereto, a spirally wound spring having its inner end secured to the arbor and its free end arranged to contact with a yarn mass upon the spindle, and means for adjusting the tension of the spring to vary its pressure upon the yarn mass.

6. A device for tensioning thread masses or the like, comprising a spindle, an arbor positioned adjacent to the spindle, a flat spiral spring having its inner portion secured to the arbor and its free end portion bearing directly upon the thread mass, and means for rotatably adjusting said arbor and for retaining the arbor in adjusted position.

7. A device of the class described comprising an arbor having a longitudinal slot therein and a flat spiral spring having a radial portion at its inner end seated in the slot in the arbor, said spring comprising an outer terminal portion provided with a recurved contact face for engagement with the peripheral surface of a yarn mass.

8. A device of the class described comprising in combination with a spindle and a yarn mass thereon, an arbor disposed substantially parallel with the spindle, a collar fast to the arbor having socket openings for the reception of a tool for rotatably adjusting the arbor, means for securing the arbor in adjusted position, and a flat spiral spring having its inner end attached to the arbor and its outer end arranged resiliently to press against the peripheral surface of the yarn mass.

Signed by me at Boston, Massachusetts this 10th day of December 1923.

ANKER PETERSEN.