M. C. HATTON.

TENSION CONTROL.

APPLICATION FILED JUNE 22, 1915.

1,182,679. Patented May 9, 1916.

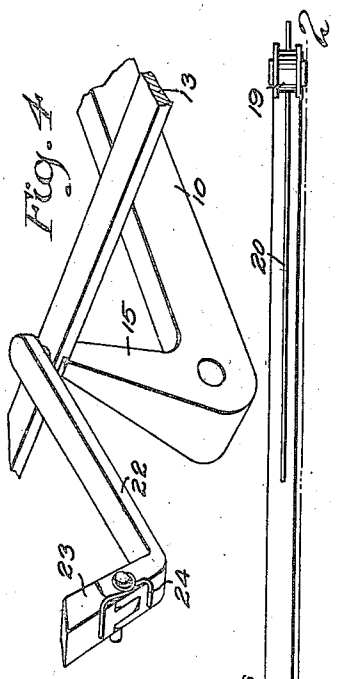


Fig. 4

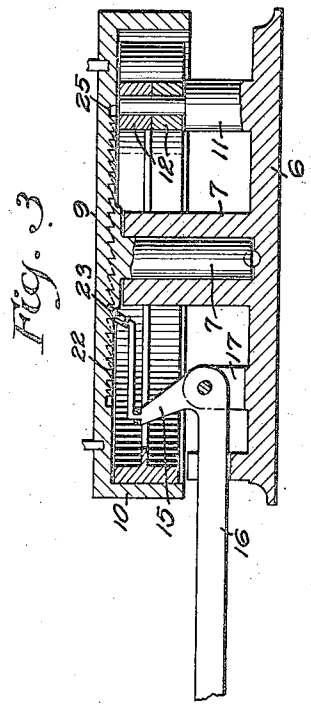


Fig. 3

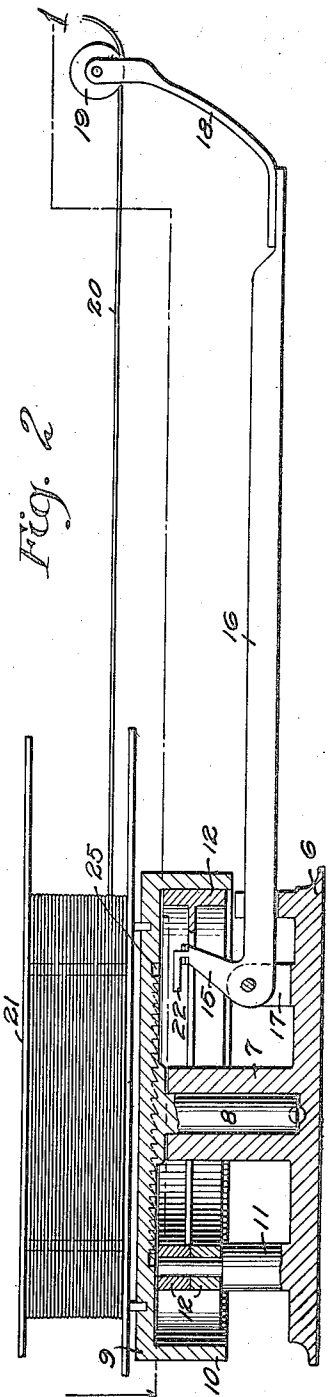


Fig. 2

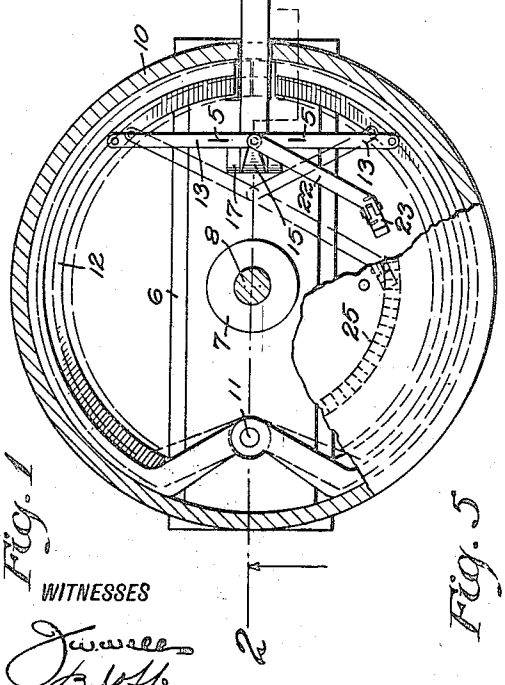


Fig. 1

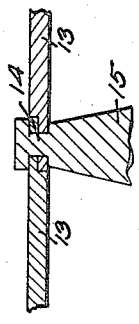


Fig. 5

WITNESSES

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TENSION CONTROL.

1,182,679. Specification of Letters Patent. Patented May 9, 1916.

Application filed June 22, 1915. Serial No. 35,676.

To all whom it may concern:

Be it known that I, MANSON C. HATTON, a citizen of the United States, and a resident of Upland, in the county of San Bernardino and State of California, have invented a new and Improved Tension Control, of which the following is a full, clear, and exact description.

My invention relates to tension devices for controlling the winding or unwinding of thread from reels or bobbins, whereby the thread on the reel will not become slack and will not tangle.

The object of the invention is to provide a simple, strong, efficient, and inexpensive device which is automatic in its action and which starts the rotation of the reel carrier when the thread begins to wind or unwind from the reel.

With the above and other objects in view, the nature of which will more fully appear as the description proceeds, the invention consists in the novel construction, combination and arrangement of parts as herein fully described, illustrated and claimed.

In the accompanying drawings, forming part of the application, similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a horizontal section on line 1—1, Fig. 2, of my device; Fig. 2 is a vertical section on line 2—2, Fig. 1, with the pawl broken away; Fig. 3 is a vertical section through the reel carrier and mechanism thereto showing the pawl in engagement with the ratchet; Fig. 4 is a perspective view of the end of the arm provided with the pawl; and Fig. 5 is a section on line 5—5, Fig. 1.

It must be understood that by thread in this specification is meant thread, wire, rope and cable.

Referring to the drawings, 6 represents a support having a central socket 7 in which the spindle 8 of a reel carrier 9 is mounted to rotate. The reel carrier 9 is preferably in the shape of a circular disk having a circular depending flange 10 at the margin thereof concentric with the spindle 8.

The support 6 has a projection 11 which forms a pivot and support for the brake shoes 12. The said brake shoes are circular segments, as can be seen from Fig. 1, having a common pivot on the projection 11. The non-pivoted ends of the shoes are pivotally connected to links 13, which links have a common pivot 14 at the end of the toe 15 forming an integral part of an arm 16. The end of the arm at the toe is pivotally mounted in lugs 17 forming an integral part of the support 6. The other end of the arm is provided with an extension 18 rigidly connected therewith and carrying a roller 19 engageable by a thread 20 which is to be wound or unwound from a reel 21 secured by any suitable means to the reel carrier 9 to rotate therewith.

Rigidly secured to the toe 15 is a pawl carrier 22, the pawl 23 of which is maintained in operative position by a spring 24. The spring 24 brings the pawl into engagement with the ratchet 25 provided on the under side of the reel carrier. The relation between the ratchet and the pawl is such that it does not interfere with the direction of rotation of the reel carrier when the thread 20 is wound on or unwound from the reel, even if the pawl contacts with the ratchet.

The operation of my device is as follows: The thread to be wound on the reel or unwound therefrom is threaded through the roller 19, and as soon as the arm 16 begins to move on its pivot under the tension of the thread, the links 13 are displaced to the position shown in dotted line in Fig. 1, and therewith the pawl carrier 22. While the arm 16 was in the position shown in Fig. 2 under the action of gravity, that is, in inoperative position, the pawl 23 was in engagement with the ratchet 25; and the raising of the arm gives a rotary impulse to the carrier through the medium of the pawl and ratchet as soon as the shoes are disengaged from the flange 10 of the reel carrier. This displacement of the reel by the movement of the arm facilitates the starting of the winding or unwinding of the thread 20 from the reel 21. The slackening in the thread, due to any cause, will permit gravity to move the arm to the position shown in Fig. 2 and thus apply the brakes and arrest the movement of the reel carrier.

While I have described the principle of operation, together with the device which

I now consider to be the best embodiment thereof, I desire to have it understood that the device shown is merely illustrative and that such changes may be made as are within the scope of the appended claims.

I claim:

1. In a device of the class described, a reel carrier mounted to rotate, a pivotally-mounted arm operable gravitationally, brake shoes within the reel carrier operable by the displacement of the arm to apply the shoes to the carrier when the arm is moved downwardly, means carried by the arm for engaging the carrier when the arm releases the brake shoes from the carrier to give a rotary impulse to the carrier, and means on the arm engageable by a thread.

2. In a device of the class described, a reel carrier mounted to rotate, a pivotally-mounted arm operable gravitationally, brake shoes within the reel carrier operable by the displacement of the arm to apply the shoes to the carrier when the arm is moved downwardly, a pawl and ratchet arrangement between the carrier and the arm operable by the displacement of the arm to give the carrier an initial displacement when the arm is raised, and means on the arm engageable by a thread the tension of which causes the arm to move upwardly.

3. In a device of the class described, a reel carrier mounted to rotate, a brake arrangement for the carrier operable by the tension of a thread, and independent means associated with the brake arrangement for positively engaging the carrier to give an initial displacement to the carrier when the brake releases the carrier.

4. In a device of the class described, a reel carrier mounted to rotate, a pivotally mounted arm operable gravitationally, brake shoes in the shape of circular segments operable by the displacement of the arm to apply the shoes to the carrier when moving downwardly, means on the arm engageable by a thread the tension of which controls the arm, and means operable by the arm for giving an initial displacement to the carrier when the shoes release the carrier.

5. In a device of the class described, a reel carrier mounted to rotate, a brake arrangement for said carrier operable by the tension of a thread, and a pawl and ratchet arrangement between the carrier and the brake arrangement becoming operative when the brake arrangement releases the carrier to give a rotary impulse to the carrier.

6. In a device of the class described, a reel carrier mounted to rotate, brakes for said reel carrier, an arm having means engageable by a thread for operating said brakes to release the brakes under a proper tension of the thread, and a pawl and ratchet mechanism positioned between the carrier and the arm and operable by the arm to give to the carrier an initial displacement after the same has been released by the brakes.

7. In a device of the class described, a support having a socket, a reel carrier having engagement with said socket mounted to rotate above the support, circular brake segments pivotally mounted on said support and adapted to engage the carrier integrally, an arm pivotally mounted on said support to swing in a vertical plane, links pivotally connecting the non-pivoted ends of the segments to said arm adjacent its pivot on the support, a pawl carrier extending from said arm, a spring-operated pawl on said pawl carrier, said carrier having a ratchet surface adapted to be engaged by the pawl when said arm is moved upwardly, said arm having means adapted to be engaged by a thread, substantially as and for the purpose set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

MANSON CARTER HATTON.

Witnesses:

HARRY FOX,

GEORGE FOX.