(No Model.)

T. H. CONNOR.

TENSION DEVICE FOR YARN DRESSING MACHINES.

No. 454,255. Patented June 16, 1891.

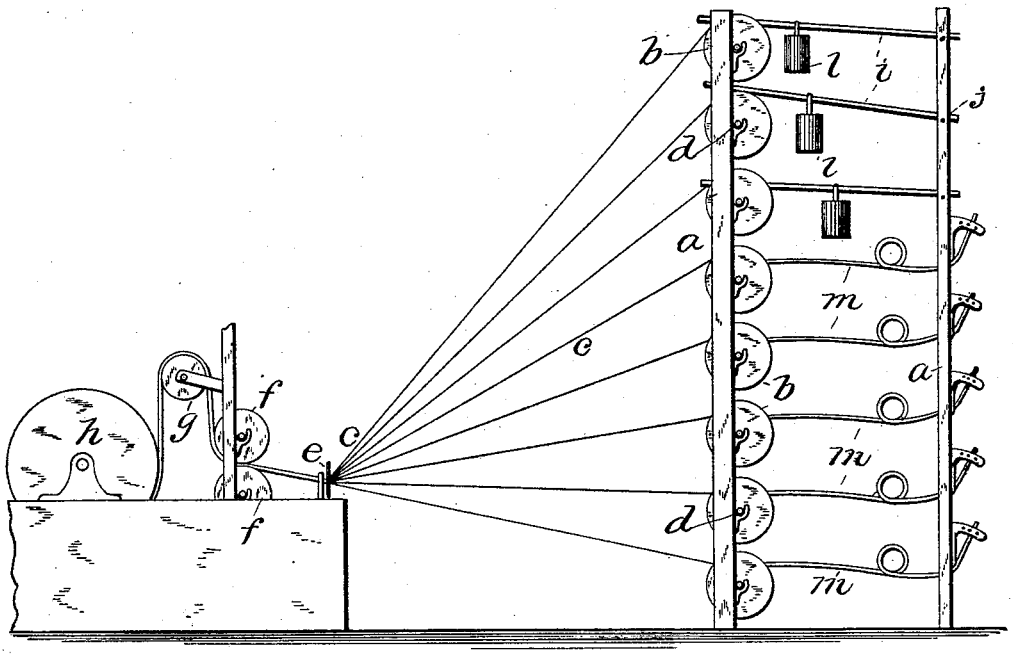

Fig. 1.

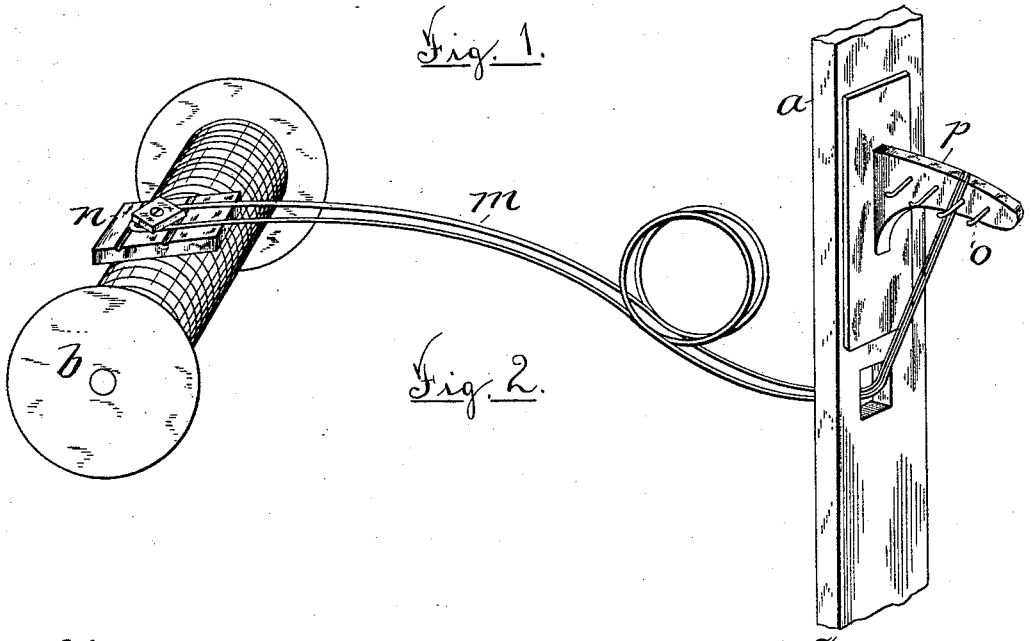

Fig. 2.

Witnesses
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UNITED STATES PATENT OFFICE.

THOMAS H. CONNOR, OF OTTER RIVER, MASSACHUSETTS.

TENSION DEVICE FOR YARN-DRESSING MACHINES.

SPECIFICATION forming part of Letters Patent No. 454,255, dated June 16, 1891.

Application filed April 14, 1890. Serial No. 347,743. (No model.)

To all whom it may concern:

Be it known that I THOMAS H. CONNOR, of Otter River, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Tension Devices for Yarn-Dressing Machines, of which the following is a specification.

In woolen and worsted dressing machines it is necessary to the performance of proper work to put the threads drawn from the spools to the guide-reed and dressing-rolls under tension, and this tension has been secured by what is termed a "paddle and weight" operating on each spool.

The aforesaid devices consist of a bar pivoted at one end to a frame and constructed at its free end as a paddle, which is arranged to bear upon the spool. A weight is arranged on the bar between its pivotal point and the paddle end. These means, constructed and related as described, operate as a kind of brake upon the spool, preventing the same from turning without exertion. When the thread-spools are full and the draft in unwinding the thread is comparatively far removed from the axis of rotation of the spool, the latter may be much more easily turned by draft on the thread than when the spool is nearly empty and the pull upon the thread is at a point close to the axis of rotation of the spool, this variation in the draft arising from the variation of the leverage involved in the operation.

As it is essential to the accomplishment of the work of dressing yarn properly to have the yarn under an even tension throughout, it is necessary to vary the tension put upon the spools in accordance with the variation of the leverage aforesaid and consequent variation in the extent of the force required to draw off the threads. This necessary variation of tension upon the spools has been in some measure accomplished by moving the weight on the bar of the paddle nearer to or farther from the spool. Under the most favorable circumstances, however, the tension on the threads is rendered uneven, and at very few, if at any, points throughout the operation will the tension be even or of the same degree, to say nothing of the labor and time expended in such efforts at adjustment.

By my improvement the objections mentioned are overcome and a tension is provided which exerts resistance to the turning of the spools, according as the degree of draft on the periphery of the spools to draw off of the threads varies—that is, as the point or line of draft varies in distance from the axis of rotation of the said spools.

My invention therefore consists in the improved construction hereinafter described and set forth.

I will first describe my invention in detail, making reference to the accompanying drawings and the letters marked thereon, forming a part of this specification, and then particularly point out my improvements in the appended claims.

Of the said drawings, Figure 1 is a side elevation of so much of a dressing-machine as it is necessary to show in order to illustrate my invention and to contrast the same with existing means for the same purpose. Fig. 2 is a perspective view of my improved tension device, some of its adjunctive parts, and a spool upon which the spring-lever acts, the invention being in this view shown on an enlarged scale.

The same letters designate the same parts or features, as the case may be, in both figures of the drawings.

a designates a frame, in which are arranged a number of spools *b*, each spool having a plurality of threads *c*. The spools *b* are provided with journal-shafts *d*, having bearings in the frame *a*, or are otherwise constructed so that they may be rotated when the threads *c* are drawn off therefrom, as they will be, and led to the reed *e*, thence between the sizing or dressing applying rolls *f f*, and thence over a guide-roll *g* to and partially around a heated drying-drum *h*, from whence they pass to the winding spool or beam.

As thus far described, the machine may be of usual form and construction or of any suitable organization.

The common form of means for resisting the rotation of the spools *b* to a degree sufficient to put the threads *c* under requisite tension as the latter are drawn off has been a bar *i*, pivoted in the rear portion of the frame, as at *j*, and provided at its forward end with a friction

pad or paddle arranged to bear upon the spool. A weight *l* was arranged to be suspended from the bar *i* and to be moved along thereon to a point nearer to or farther from the spool, in order to make the pad or paddle *k* bear with greater or less force upon the spool, according as to whether the latter were full or partially or nearly empty. As is known and will be apparent, this means of varying the tension on the yarn or threads *c*, while being irregular and imperfect, entailed considerable watchfulness and work.

By my invention, which is shown as connected with the lower five spools *b* in the frame *a*, the objections and difficulties mentioned are overcome. Instead of the weight and bar hereinbefore described, I employ a spring-lever *m*, provided on its forward end with a pad *n*, arranged to bear upon the spool and engaged at its rear end with the frame, so that when the pad or inner end is raised from its normal position, as it will be in order to bring it to rest upon a spool, it will bear with some resilient force upon the latter, and the higher it is raised, as when the spool is full or nearly full, the greater will be its bearing force thereon. It will therefore be observed that the pad *n*, offering resistance to the rotation of the spool, will vary in the force of such resistance exactly in accordance with the amount of thread or yarn on the spool, and so maintain an even tension on the thread as it is drawn off throughout the operation of dressing all of the yarn on the spool.

I prefer to make the resilient action of the spring-lever adjustable, and one of the ways of accomplishing this is shown in the drawings, wherein the rear end of the spring-lever is shown as extending through a portion of the frame *a*, and is constructed and arranged to be engaged by any one of the hook-pins *o*, projecting from the projecting portion of a bracket *p*, attached to the frame.

It will be observed that the point where the lever *m* passes through the frame and bears thereon constitutes a fulcrum-point, so that by adjusting the rear end of the lever nearer to or farther from the frame the pad *n* can be made to bear with greater or less force upon the spool.

It is obvious that changes may be made in the form and arrangement of parts comprising my invention without departing from the nature or spirit thereof.

Having thus explained the nature of my invention, and described a way of constructing and using the same, I declare that what I claim is—

1. The combination, with a vertical frame carrying at its front a plurality of revoluble spools of yarn, of a tension device for each spool, comprising a spring-lever provided at one end with a pad to bear upon the spool and having its other end bent rearwardly and upwardly, as described, the rear part of the spool-supporting frame having openings, in each of which the bend of a lever is located, and a series of brackets secured on said rear of the frame and carrying pins, with which the rear ends of the levers adjustably engage, substantially as set forth.

2. The spring-lever *m*, provided at its forward end with a pad *n*, combined with a bracket connected with the frame and provided with pins *o*, with which the other end is adapted to be engaged, as set forth.

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

THOMAS H. CONNOR.

Witnesses:
WM. N. MOORE,
JAMES A. STILES.