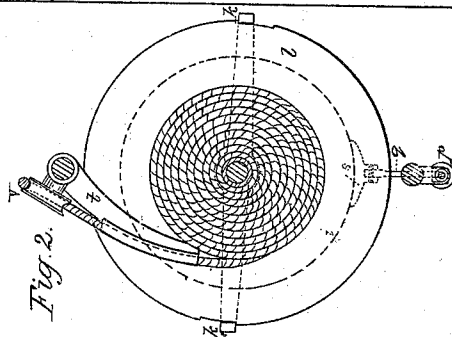
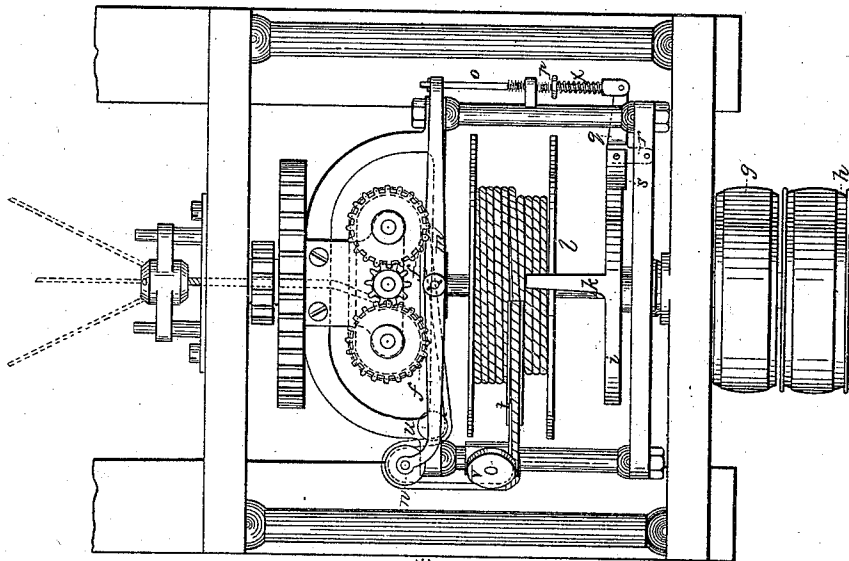
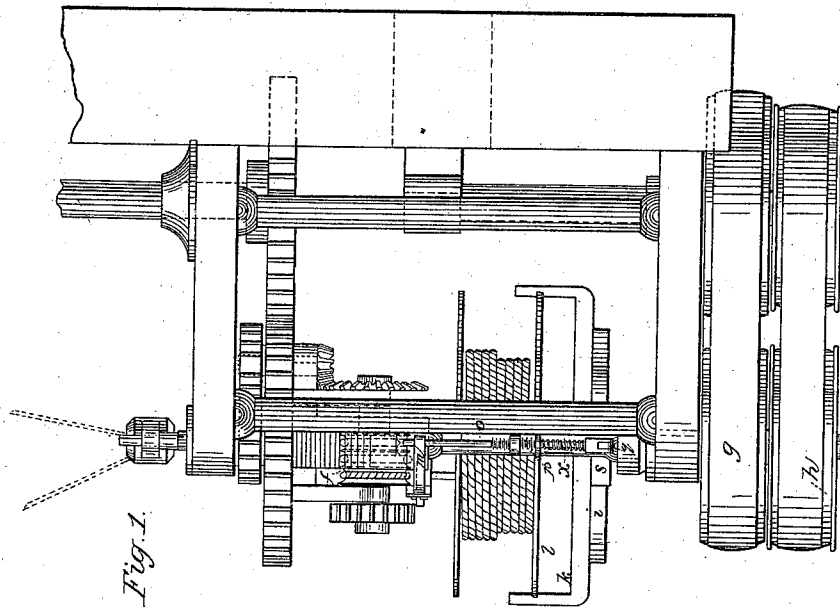


P. B. Tyler.
Mach. for Winding Rope.

Nº 11,342.

Patented Jul. 18, 1854.



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UNITED STATES PATENT OFFICE.

PHILOS B. TYLER, OF SPRINGFIELD, MASSACHUSETTS.

IMPROVEMENT IN WINDING ROPE, CORD, OR YARN.

Specification forming part of Letters Patent No. 11,342, dated July 18, 1854.

To all whom it may concern:

Be it known that I, PHILOS B. TYLER, of Springfield, in the county of Hampden and State of Massachusetts, have invented a new and useful Improvement in the Reeling Apparatus of Rope or Cable Machinery as now Ordinarily in Use; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation; Fig. 2, details, &c.; Fig. 3, a plan.

My improvement consists in connecting with the bobbin of a spinning-frame or the reel of a rope-layer a variable friction, to be operated by the tension of the cord which is being wound in such a manner as to regulate the winding force, so as to wind a spool of yarn or a coil of rope with an even strain from its smallest to its largest diameter, and of adjusting the same by means of a spring, so as to be able to wind a cord regularly with more or less tension upon it; also, in so arranging a dog or finger for drawing the reel under the great tension of the rope in winding as to allow it to move freely on the spindle in its lateral motion, in combination with a finger or guide which acts upon the rope as it is coiled to move the reel laterally, so as to wind the rope regularly from end to end of the reel, the rope as it is wound forming a regular wedge for that purpose.

In the ordinary spinning-frame for making rope-yarn the yarn is wound upon the bobbin by the following apparatus: The flier has a small pulley affixed to it, driven by a band from an elongated drum below, and the bobbin is driven by a band from the same drum, passing over a pulley connected with the bobbin, which pulley is of larger diameter than that affixed to the flier and traversing with it, carrying the belt along the extended drum as it traverses. The difference in the size of the pulleys produces the unequal velocity of the flier and the bobbin required in winding. The flier, as will be seen, moves with greater velocity than the bobbin, the difference being sufficient to wind the yarn as it is spun onto the smallest diameter of the bobbin. As the bobbin increases in size by winding the yarn thereon its motion must be increased. This is effected by slipping the belt upon the pulley; but it will be perceived that this mode is

defective, winding the yarn too tight at the commencement, and as the leverage increases with the size of the bobbin the yarn is wound too slack and is liable not to draw through the spinning apparatus properly, causing breakage and much inconvenience, particularly when the belt becomes slackened by use. The evils herein enumerated are so great when winding a rope or other large cordage onto a reel as to derange the other operations connected with it, rendering this mode of winding entirely inadmissible for that purpose, and my improvements are intended to obviate these difficulties and defect in this mode of winding.

The reel is placed in the flier, which twists and lays the rope on a spindle running through the axis of the flier. To the rear end of the flier there is a pulley affixed outside the supporting-frame, from which a band *g* connects with a pulley below. Connected with this last-named pulley is another of smaller diameter, from which a band passes to another pulley *h*, attached to the spindle, upon which the reel traverses loosely, as about to be described, the spindle moving sufficiently slower than the flier to take up all the rope as fast as it is given off by the draw-rollers, as in ordinary spinning-frames. To the spindle in my improvement is attached a disk or ring *i* inside the flier, having a dog or finger *k* affixed to it, the outer end of which is bent at right angles and catches into a notch on the reel *l*. This reel is loose on the spindle of the flier and traverses back and forth as the rope is wound on in a manner about to be described. A lever *m* lies along the cross-piece of the flier next the grooved rollers *f*, and having its fulcrum-pin upon which it turns at the center of the said cross-piece, as clearly shown in Fig. 3. On one end of this lever there is a pulley *n*, and at the opposite end a rod *o* is attached, which passes through a hollow set-screw *p* in an eye or stud on the arm of the flier. This rod is jointed at its opposite end to a bent lever *q*, and upon it between said bent lever and the set-screw *p* a spiral spring *x* is coiled to resist the movement of the lever *m* outward. The fulcrum of the bent lever is at *r* in the head of the flier, and at its angle is jointed a brake-piece *s*, which bears upon the perimeter of the disk or ring of metal *i*, above named, when it be-

comes necessary to counteract the force of the bands and pulleys by which the differential motion between the disk *i* and flier is produced. To the arm of the flier opposite that on which the spring is connected there is a stationary guide *t*, which has no lateral movement, but can swing outward. Its end that rests upon the reel or rope guides the rope as it is wound thereon and causes the reel to traverse laterally. The back of this guide is deeply grooved, down which groove the rope or cord is conducted to the reel and wound on.

The rope after being twisted and drawn through the condensing-tube in the usual manner passes directly over a stud-pulley *u*, and thence around the pulley *n* on the lever *m*, before named, and, passing onward over pulley *v*, passes along the groove of the guide *t* onto the reel, where it is properly wound, being drawn off by a certain determined force, caused by the differential motions of the two sets of pulleys. If the strain upon the rope between the condensing-tube and the reel is from any cause increased beyond the determined strain to which the spring *x* is set by the screw *p*, the lever *m* is drawn forward toward pulley *v* by the rope over pulley *n* and brings the brake *s* down upon the disk *i*, which carries around the spindle, and this causes the belt *h* to slip and the reel to move faster and more nearly approximate the motion of the flier, by which a relief of the strain is effected, so that at all times with ever so irregular a rope and any change in the size of the coil upon the reel the strain shall be equal.

It will be seen that the reel instead of being driven by an attachment at or near the center is driven by a dog or finger at the periphery. This is a very important point and one that caused much trouble to accomplish. The reel must slide; but if made to turn by a fixture at the center it caused so much friction as to prevent the proper action of the guide, and it was not until the outer connection was made that all the parts were operated properly. The guide, as will be seen, causes the reel to traverse back and forth, by which the rope is properly wound into a coil.

In applying these improvements to spinning-machines the mode is substantially the same.

Having thus fully described my improved mode of reeling on rope or yarn after it is made, what I claim therein as new, and for which I desire to secure Letters Patent, is—

1. The combination of the friction-brake, operated as described, and the sliding belt or its equivalent, as herein specified.

2. Driving the reel by its outer periphery by the employment of the finger or dog herein described, in combination with the guide for causing the reel to traverse the reduction of friction caused by the mode of driving, enabling the guide to cause the reel to traverse without too much resistance.

PHILOS B. TYLER.

Witnesses:

THOS. E. WARREN,
JACOB HATSEL.