P. B. Tyler.
Cordage Mach.

No. 11,202. Patented Jun. 27, 1854.

Fig. 2.

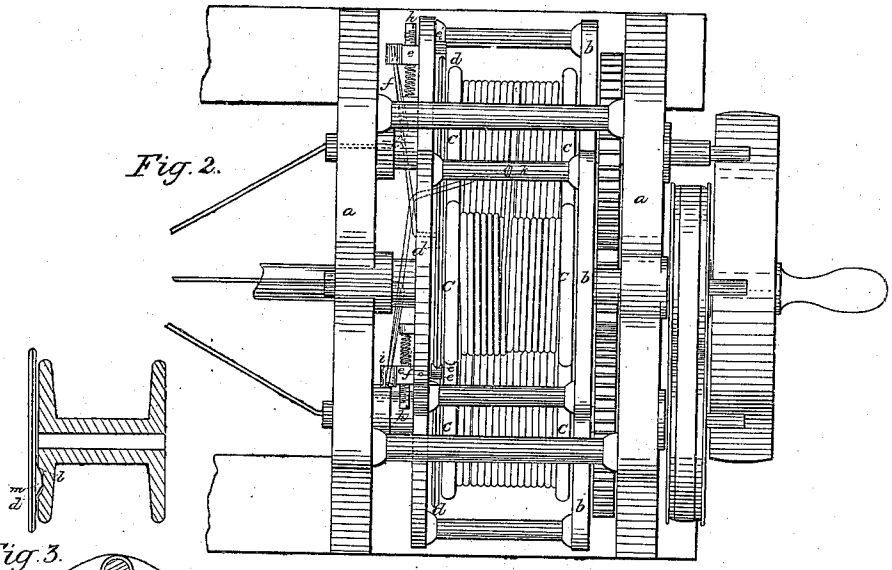


Fig. 3.

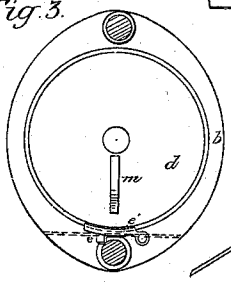
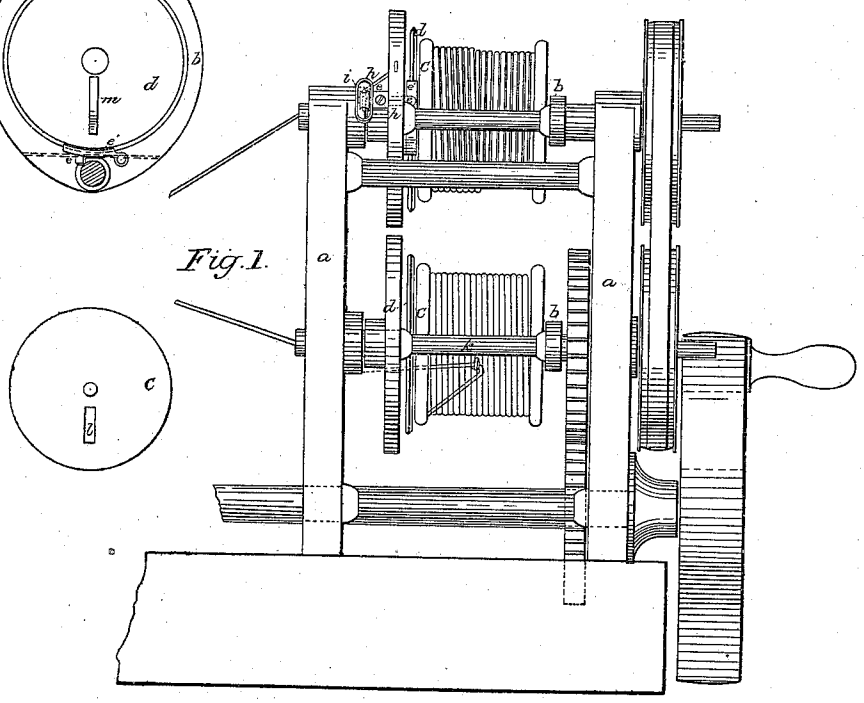


Fig. 1.



UNITED STATES PATENT OFFICE.

PHILOS B. TYLER, OF SPRINGFIELD, MASSACHUSETTS.

IMPROVEMENT IN CORDAGE MACHINERY.

Specification forming part of Letters Patent No. 11,202, dated June 27, 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 certain new and useful Improvements in Cordage Machinery; 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, a plan; Fig. 3, detached sections.

The nature of my invention consists in connecting with the bobbin or spool a variable friction which shall keep up an exact balance of resistances, or nearly so, at all times without regard to the unevenness of the yarn or the quantity of yarn on the bobbin, working with equal facility upon a rough and uneven thread as upon one smooth and even, and when the bobbin is full, as when it is nearly wound off, laying all the strands into the cord under an equal tension. When the bobbin is not placed in a flier, but the yarn or thread is required to be drawn off under an even tension, a simple standing frame may be substituted for the flier, so that the lever and spring and friction-brake may be brought to bear upon the bobbin with the same effect as when the bobbin is in a flier and in motion.

In order to form a rope or other cord of the greatest strength from a number of threads or strands, it is important that the strands should all run into the cord under an equal tension, so that in resisting strain each strand may exert its proportion of strength.

Heretofore great difficulties have been encountered in introducing proper and equal strain upon the yarns or strands going to form a cable or rope or other cord while unwinding from the bobbin, the diameter of which is constantly varying as the strand is unwound therefrom, and many devices have been suggested and essayed for overcoming these defects, some of which have answered, to a certain extent, when the yarns or strands were smooth and of equal size throughout, gradually diminishing in strength as the leverage upon the bobbin from which the yarn unwound decreased by bearing against the strands upon the bobbin or otherwise, but still working by some absolute rule and with a complete action of parts liable to derangement, and which left all unequal strains arising from knots or uneven rough yarns and other irregular causes to be borne by and superadded to the regular strain, rendering it impossible to make a cord of such yarns in which each should bear an equal strain. The object, therefore, of my invention is to place a regulator of the strain upon each strand, which shall act equally well to regulate the friction as the bobbin is reduced in size as the strand unwinds, and also at the same time control the effect of rough strands.

The construction for a rope layer is as follows: I form a proper frame *a*, in which are placed fliers *b* of ordinary construction, having bobbins *c* placed in them, with their axes coincident with those of the fliers, as clearly shown in the drawings. Between the front head of the flier and the bobbin there is a disk of metal *d*, which is connected with the bobbin, as presently described, and turns loosely on the spindle of the flier as the bobbin does. The bobbin is connected with the flier, as shown in Fig. 3. There is an oblong hole *l* in the bobbin, into which, when it is in place, the spring *m* on the face of the disk *d* enters and causes it to turn with it. It will be seen that while the bobbin can be slipped out or in, and for this purpose depress the spring, said spring acts as a perfect catch to revolve the bobbin by. Upon the outer perimeter of this disk a friction-brake *e'* bears, which is attached to the flier and carries around the bobbin with it when not unwinding. Upon this brake the inner end of a short lever *e* of the first order bears. Said lever passes through the head of the flier in which it has its fulcrum and projects upon the opposite side, where a spring *f* presses it outward, making its inner end to bear the brake down upon the disk to cause the bobbin to turn with the flier and preventing its unwinding with a force equal to the strain required upon the yarn or strand. A set-screw *h* regulates the tension of the spring. At the extreme end of the lever there is a pulley *i*, for a purpose about to be described.

The yarn or strand from the bobbin passes out to an eye *k*, attached to one arm of the flier about midway of the bobbin, and onward to the head end of said arms, where it passes through a proper opening, and thence

at right angles across the head of the flier to the pulley *i* above named, around which it turns and comes back to the nose of the flier, into which it enters, and so out at its axis of motion. Now it will be perceived when the strand runs smoothly off from the bobbin with the proper amount of tension, caused by the friction at the different angles and turns, superadded to the friction of the brake upon the disk, that of a knot or rough place in the strand or yarn should cause an excess of friction at any of the angles, so as to bring a greater strain upon the strand, it immediately draws down the lever against the force of the spring and relieves the friction-brake and instantly adjusts the tension to its proper force. Practice has shown the efficiency of this simple device to remedy defects of unequal tension with the most irregular unwinding and with the roughest yarns, instantly restoring the equilibrium when disturbed from any cause and acting equally throughout the entire unwinding of the yarn from the bobbin, which so greatly varies in its diameter, and is effected with much less machinery than could be otherwise accomplished.

Having thus fully described my improvements in rope machinery, what I claim therein as new, and for which I desire to secure Letters Patent, is—

The regulator, substantially as above described, wherein the tension of the strand so acts upon a friction-brake as to make a uniform resistance and consequently a uniform tension of the strand or thread.

PHILOS B. TYLER.

Witnesses:
THOS. E. WARREN,
JACOB HATSEL.