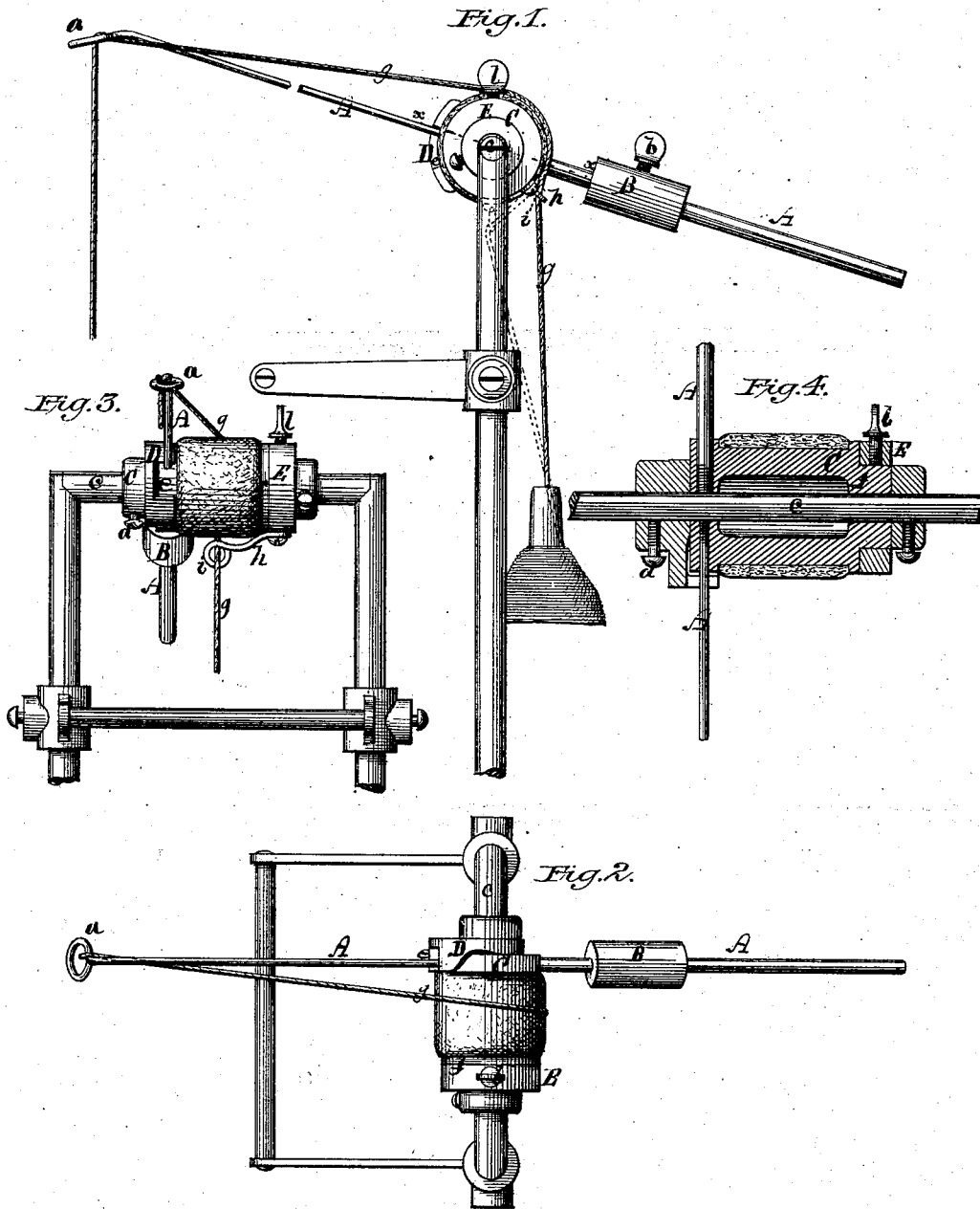


W. H. ABEL.

YARN TENSION DEVICE AND TAKE-UP FOR KNITTING MACHINES.

No. 261,415.

Patented July 18, 1882.



Attest:
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UNITED STATES PATENT OFFICE.

WILLIAM H. ABEL, OF LACONIA, NEW HAMPSHIRE.

YARN-TENSION DEVICE AND TAKE-UP FOR KNITTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 261,415, dated July 18, 1882.

Application filed November 30, 1878.

To all whom it may concern:

Be it known that I, WILLIAM H. ABEL, of Laconia, in the county of Belknap and State of New Hampshire, have invented an Improved Yarn-Tension Device and Take-Up for Knitting-Machines; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making part of this specification—

Figure 1 being a side view of my improved yarn-tension device; Fig. 2, a top view of the same; Fig. 3, a front view thereof; Fig. 4, a section of the same in a plane indicated by the line *x x*, Fig. 1.

Like letters designate corresponding parts in all of the figures.

The ordinary tension and take-up spring for knitting-machines is not capable of adjustment, nor is it reliable, since its force gradually weakens.

The object of my invention is to provide a yarn-tension and take-up which shall have all the capability of yielding, in case of obstruction, that a spring possesses, and the additional capabilities of an adjustable yielding force, as well as an adjustable friction-surface over which the yarn is drawn in knitting, and a vibrating take-up arm for taking up the slack or overdrawn thread.

The first part of my invention consists in a yielding tension and take-up lever provided with a counter-weight adjustable in position thereon to take the place of the guide-opening now used upon knitting-machines. I thus employ a dead-weight changeable as to the force it exerts by shifting its position on a pivoted lever.

In the drawings, A represents the guide or take-up lever, provided with an eye, *a*, through which the yarn passes, and with a counter-weight, B, on the opposite arm of the lever. This weight, as represented, fits and slides for adjustment upon the lever-rod, and is secured in any desired position thereon by a set-screw, *b*. This resisting force to the yielding of the lever is of course varied at pleasure by the adjustment of this counter-weight, thereby adapting it to any kind of work; and when the lever does yield it yields to the extent required without in-

creasing resistance, as in the case of a spring. This lever is secured to a hub or socket cylinder, C, which has a partial or vibratory turning movement on a horizontal rod or pivot, *c*, mounted in any suitable way upon the knitting-machine. The extent of this vibratory movement of the lever and the position thereof are determined by a stop, D, secured to the pivot-rod *c* by a set-screw, *d*, the lever playing between the two shoulders of a notch, *e*, as shown in Fig. 3.

The second feature of my invention consists in a friction-tension composed of an adjustable yarn-carrying eye or loop, in combination with a cylindrical or round friction-surface over which the yarn passes, and this friction device I also combine with my dead-weight take-up or tension device.

In the drawings the cylindrical friction-surface is an extension, *f*, of the lever-hub C, the same being covered with felt or other suitable soft friction-surface, over which the yarn *g* passes, as shown. Upon the end of the hub or cylinder C is situated a collar, E, which bears an arm, *h*, that has an eye or loop, *i*, through which the yarn runs. This collar is secured to the hub by a set-screw, *l*, and thereby it can be turned to any position on the hub and secured there, thus carrying the arm *h* and its eye or loop *i* around the friction-surface *f*, concentric therewith to any extent required, so as to cause the yarn to travel in contact with a greater or less portion of its circumference, and consequently increase or diminish the friction at will. Two positions of the eye or loop *i* are shown in Fig. 1, one in full lines and the other in dotted lines.

I am aware that, broadly speaking, pivoted levers have been provided with adjustable weights, and that pivoted levers have also been provided with stops to limit their oscillations, and I do not claim broadly the invention of such devices, my invention being limited to the suitable application of the principles of such devices to the peculiar improvement of yarn-tension mechanism as I have above set forth, which has involved much thought and contrivance.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The yielding tension and take-up lever

A, provided with an adjustable counter-weight, B, substantially as and for the purpose herein specified.

2. The stop D, in combination with the vibratory weighted tension and take-up lever A, substantially as and for the purpose herein specified.

3. In combination with the cylindrical friction-surface *f*, the adjustable yarn eye or loop *i*, and a support or bearing for the loop, whereby it may be adjusted with reference to the

friction-surface, substantially as and for the purpose herein specified.

4. In combination, the dead-weight take-up with the friction device for regulating the tension of the yarn, substantially as shown and described.

WM. H. ABEL.

Witnesses:

J. S. CHASE,
S. M. S. MOULTON.