H. Brockway

Knitting Machine Take up.

No. 44,932. Patented Nov. 8, 1864.

Fig. 2.

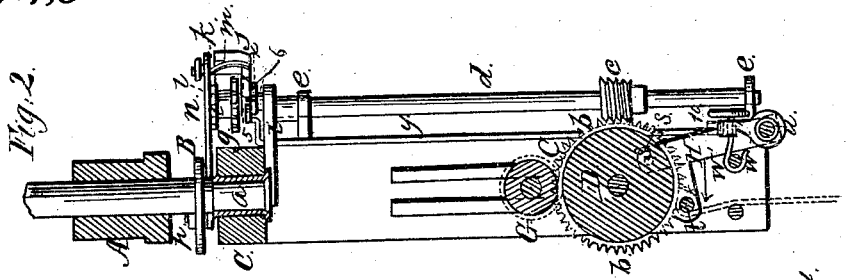

Fig. 1.

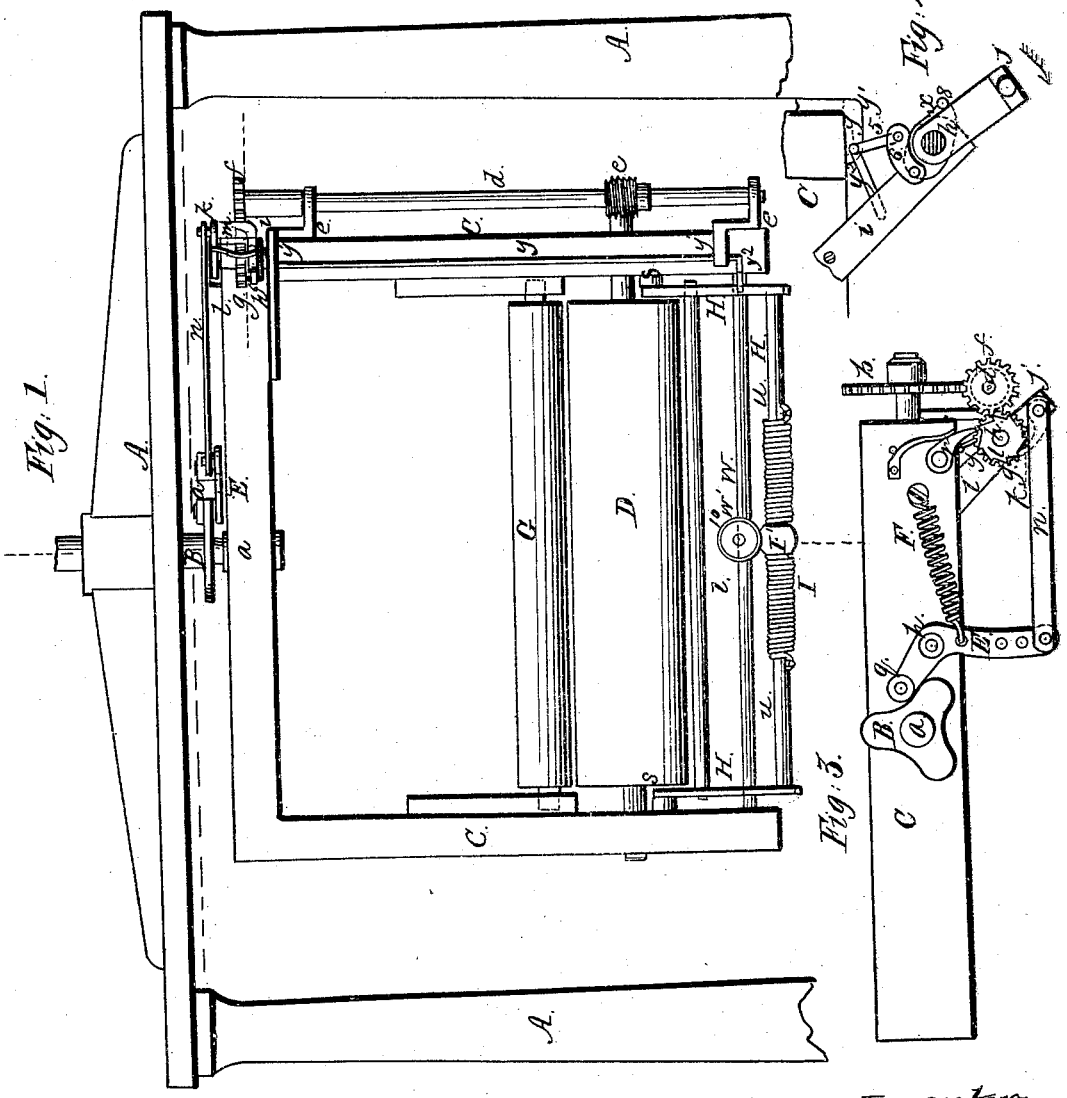

Fig. 4.

Fig. 3.

Witnesses:

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HENRY BROCKWAY, OF COHOES, NEW YORK.

IMPROVEMENT IN TAKE-UP OF CIRCULAR-KNITTING MACHINES.

Specification forming part of Letters Patent No. 44,932, dated November 8, 1864.

To all whom it may concern:

Be it known that I, HENRY BROCKWAY, of Cohoes, in the county of Albany and State of New York, have invented a new and useful Improvement in the Take-Up of Circular-Knitting Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a front view of a take-up. Fig. 2 is a vertical section of the same at right angles to Fig. 1. Fig. 3 is a plan of the same. Fig. 4 is a horizontal section of some of the working parts of the same, on a larger scale than Figs. 1, 2, 3.

Similar letters and numbers of reference indicate like parts.

This invention consists in certain novel means of effecting the operation of the take-up roll of a knitting-machine, whereby such operation is governed by the tension of the web.

A is the standard which supports the stationary upright central stud, *a*, by which the take-up is suspended and about which it rotates. This stud is situated in line with the axis of rotation of the knitting-machine, and has fast upon it the stationary cam B, by which the operation of the take-up is produced.

C is the rotating frame of the take-up, having in its upper part a central hole, which is bushed to receive the stud *a*.

D is the rough-surfaced roll by which the knitted web is drawn up from the machine, having its journals fitted to bearings in the sides of the frame C, and having fast on one end, outside of the said frame, a worm-wheel, *b*, which gears with an endless screw, *c*, on the lower part of an upright shaft, *d*, which works in bearings *e e*, attached to the frame C. On the upper part of this shaft there is secured a spur-gear, *f*, which gears with a spur-gear, *g*, which works loosely on an upright stud, *h*, which is secured in bracket or arm *i*, attached rigidly to the frame. On this stud there is also fitted a pawl-lever, *j*, which carries a pawl, *k*, which engages with a ratchet-wheel, *l*, which is secured to the spur-gear *g*, the said lever working upon the said stud as a fulcrum, and the pawl qeing held to the ratchet-wheel by means of a spring, *m*. The said lever is connected by a rod, *n*, with one end of a lever, E, which works horizontally on a fixed fulcrum-pin, *p*, secured in the top of the frame, and the other end of the said lever has attached to it an anti-friction roller, *q*, arranged to work on the edge of the cam B. A spring, F, is so applied to the said lever as to keep the roller *q* in contact with the cam when it is not held back there from by the means hereinafter to be described.

In the rotation of the frame C about the stud *a*, which accompanies the rotation of the needle-plate or needle-ring, the lever F is caused to derive from the cam B and spring F (except when the lever is held back from the cam, as hereinafter mentioned) an oscillating movement upon its fulcrum-pin *p*, and to impart a similar movement to the pawl-lever *j*, by which the pawl *k* is made to turn the ratchet-wheel *l* and the gear *g*. The gear *g* gives motion to the gear *f*, and through it to the shaft *d*, and the endless screw on the said shaft gives motion to the worm-gear *b*, and through it to the take-up roll D, which draws up the web and winds it upon the roll G. In this operation the ratchet-wheel *l* is prevented from turning back, and the take-up retained by means of a stop-pawl, *r*, applied to the said wheel.

The above-described operation of taking up is not, however, intended to be continuous, but only to continue while the web is slack between the knitting-needles and the roll D, or while the tension thereon does not exceed a certain desirable degree, and I will now proceed to describe the means by which the tension is made to regulate the operation.

H is a vibrating frame attached by opposite pins *s s* to opposite sides of the frame C, and having arranged within it a bar, *t*, which may be called the "tension-bar," which is parallel with the roll D, and over which the web passes to the roll D, as shown in Fig. 2, where the web is represented in red color. This frame has attached to its lower rail, *u*, a strong spring, I, which is connected with a vibrating arm, I′, which is fitted loosely to the said rail, and to which there is attached a hook, *w′*, which hooks onto one of the lower rails, *w w*, of the frame C. This spring, by its action on the frame H, draws the tension-bar

t in the direction indicated by the arrow in Fig. 2, which is the opposite direction to that in which the tension of the cloth tends to draw it, and while the tension of the cloth is not too great the said spring holds back the frame H in contact with the rail w, before mentioned.

On the same side of the frame B on which the shaft d is arranged there is placed near the said shaft a small upright rod or shaft, y, which is fitted to turn in suitable guides y', secured to the said frame. The lower end of this shaft is bent to form an arm, y^2, which is long enough to bear against one side of the tension frame H, and the upper end is made or furnished with a crank, 5, the wrist of which is connected by a link, 6, with one end of a short lever, x, which is fitted loosely to the stud h, just below the pawl-lever j, and the other end of which is turned up against one edge of the pawl-lever, as shown at 8 in Figs. 2 and 4. When, by reason of the tension on the web, the pressure of the web against the tension-bar t is sufficient to overcome the tension of the springs u and F and move forward the frame H, the said frame presses forward the arm y^2 of the shaft y and so turns the said shaft in such manner that the crank 5 and link 6 are made so to act upon the lever x as to press the turned-up end 8 thereof against the pawl-lever j, and so move the said lever in the direction indicated by the arrow in Figs. 3 and 4. This movement of the pawl-lever produces a movement of the lever E which brings the roller q out of range of the cam B, or so nearly out of range thereof that the said cam will not produce a sufficient movement of the said lever and the pawl-lever j to make the latter carry the pawl k over a tooth of the ratchet-wheel, and hence the operation of the roll D is stopped; but as the tension of the web diminishes and the frame H is drawn back again by the springs, the roller q is allowed to come back within range of the cam, and the take-up again commences.

In order to provide for a less or more rapid take-up and a closer or more open web, the hook w' is attached to the arm I′, before mentioned, by means of a screw-thread on its stem, which passes through a hole in the said arm and a nut, 10, screwed onto the said thread outside of the said arm. By screwing up the said nut the tension of the spring is increased, and by that means the take-up is made more rapid, and by unscrewing the said nut an opposite effect is produced.

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

1. The combination, with the stationary cam B and take-up roll D, of the levers E and j, pawl k, ratchet-wheel l, gears g f, shaft d, endless screw c, and worm-wheel b, the whole applied and operating substantially as herein specified, to produce the movement of the said roll, substantially as herein specified.

2. The shaft y, with its arm y^2 and crank 5, the link 6, or its equivalent, and the lever x, applied in combination with each other and with the frame H, ratchet-wheel l, pawl-lever j, and cam-lever F, substantially as and for the purpose herein set forth.

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Witnesses:

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