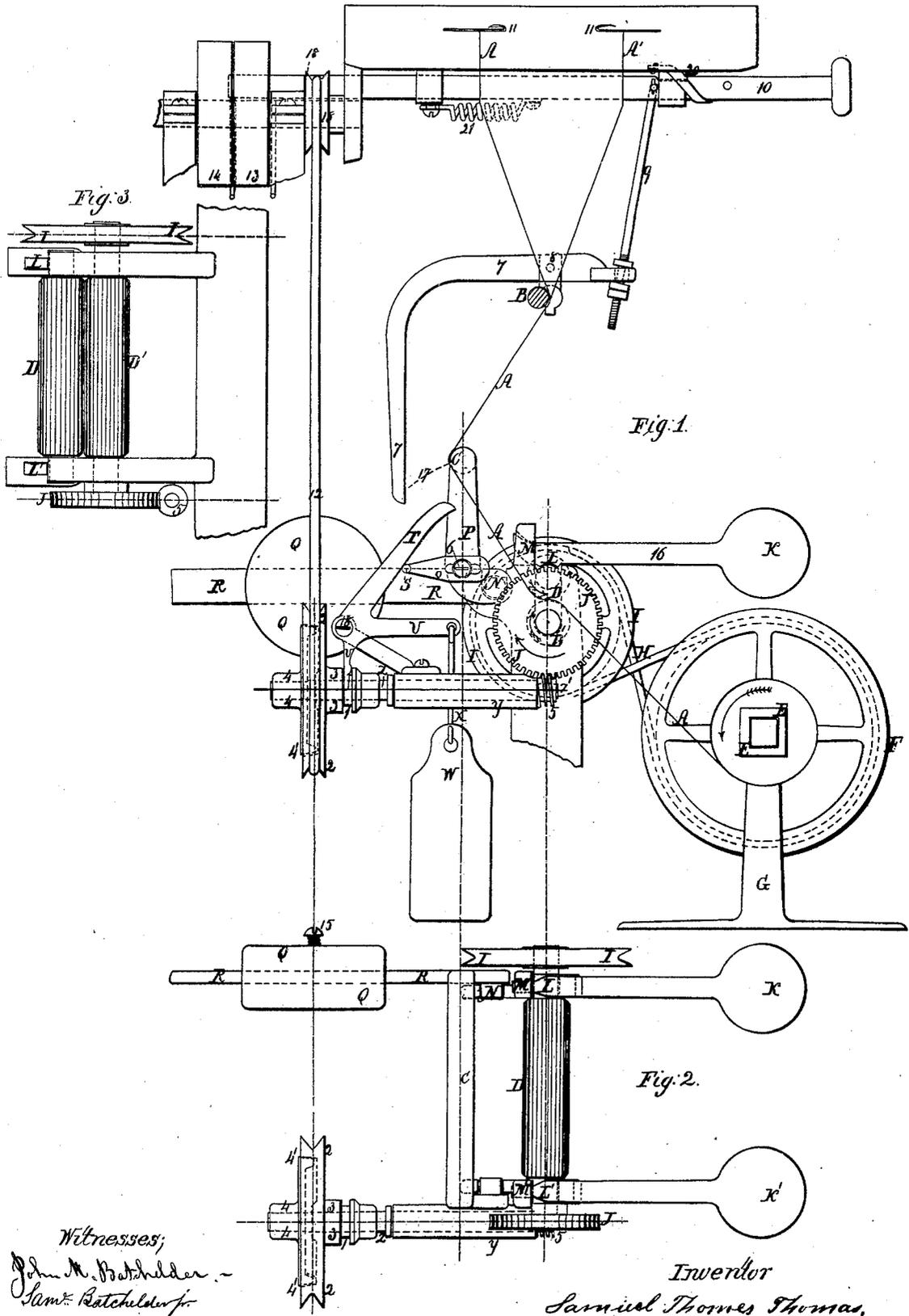


*S. T. Thomas.*  
*Knitting Machine Tension.*

*N<sup>o</sup> 34,852.*

*Patented Apr. 1, 1862.*



*Witnesses;*  
*John M. Batchelder -*  
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*Samuel Thomas Thomas,*

# UNITED STATES PATENT OFFICE.

SAMUEL THOMES THOMAS, OF LACONIA, NEW HAMPSHIRE.

## IMPROVEMENT IN KNITTING-MACHINES.

Specification forming part of Letters Patent No. 34,852, dated April 1, 1862.

*To all whom it may concern:*

Be it known that I, SAMUEL THOMES THOMAS, of Laconia, in the county of Belknap and State of New Hampshire, have invented an Improvement in Knitting-Looms; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters and figures marked thereon.

Figure I is a side elevation of the machine. Fig. II is a top view of the lower part of the same. Fig. III is an elevation of the feed-rollers.

My improvement in knitting-machines relates principally to the regulation of the "take-up" or forward movement of the web of knitted goods, the rate or velocity at which the web moves being dependent upon the tension of the web—that is, if the finished fabric becomes too slack and is not taken up or carried forward fast enough the mechanism is so constructed that the velocity of the rollers that grip and carry the web forward is increased until the required tension is attained, after which it ceases to act until it is again required.

My improvement does not relate to the mode of knitting or forming the stitch, but the position of the needles is shown at 11, Fig. I, near to the top of the machine. Below the needles the knitted fabric A A' descends and passes in a flattened form, partly around the bar B, that extends from side to side of the machine. Thence the web passes partly around the bar C, which is placed at the top of the vertical arm P of the rocker-lever P R. Thence it passes downward and between the fluted feed-rollers D D', and after leaving there it is wound upon the square shaft or spindle E. The two arms of the rocker-lever P R are nearly at right angles with each other, and upon the horizontal part R a weight Q is placed, and is held in such a position by the set-screw 15 as will cause the roller C to exert the required tension upon the web, when the whole machine is in perfect adjustment, and the web moving forward at the proper velocity to make perfect work. Now, as the knitting pro-

gresses and the web or fabric becomes slack, the roller C at the top of the rocker-bar is moved in the direction of the dotted lines 17 by the action of the weight Q. The effect produced by this motion is as follows: A short arm O is affixed near the base of the upright arm P of the rocker and projects a few inches beyond it, carrying near its outer end a friction knob or pin S. A tri-armed lever T U V, having its fulcrum or center at 18, (where it is supported by the frame of the machine,) forms the communication between the movable rocker and those parts that serve to change the velocity of the feeding-rollers D D'. As the pin S above named moves downward, the upper arm T of the tri-armed lever follows it, being depressed by the weight W, which hangs upon its horizontal arm U, and thus moves the lower arm V (of the same lever) outward. The lower end of the arm V remains at all times in the groove 1 of the sliding collar or sleeve 3, on one end of which the grooved pulley 2 is affixed. This slides upon the horizontal shaft Z Z', which has its bearings in the tubular journal-box Y, and carries at one end the worm 5 and at the other the cone-driver 4. The pulley and sleeve 2 3 are constantly in motion, being driven by the band 12 and pulley 18, which is placed near the main driving-pulley 13. When the arm V moves outward, the conical recess in the pulley 2 is brought in contact with the cone-driver 4', and gives motion to the attached shaft Z Z' and the worm 5, which turns the gear J. This gear is affixed to the lower feeding-roller D', and turns it in the direction of the arrows. The upper roller D is held in contact with the lower one by the weight and arm K 16 L M, so that the web or finished fabric as it passes between the rollers is firmly gripped and carried forward, thus increasing the tension and bringing back the arm P of the rocker-lever to its first position. This raises the pin S, the lever T, and moves the arm V, which withdraws the sliding sleeve and pulley 3 2 and relieves the friction on the driving-cone 4'. This stops the revolution of the worm 5 and the gear and feeding-rollers J D D'. By this alternate contact and slight re-

lease of the cone-driver the web is kept at a perfectly uniform tension, as before stated.

What I claim, and desire to secure by Letters Patent in knitting-machines, is—

The rocker-bar having an adjustable weight by means of which any required strain or tension may be applied to the web, in combination with the weighted tri-armed lever or

its equivalent acting directly upon a friction cone-driver which turns the feeding-rollers at the proper velocity, substantially in the manner described.

SAMUEL THOMES THOMAS. [L. s.]

In presence of—

JOHN M. BATCHELDER,  
SAML. BATCHELDER, Jr.