Sheet 1-2 Sheets.

J. Remick.
Let-Off Motion.

No. 70,265. Patented Oct. 29, 1867.

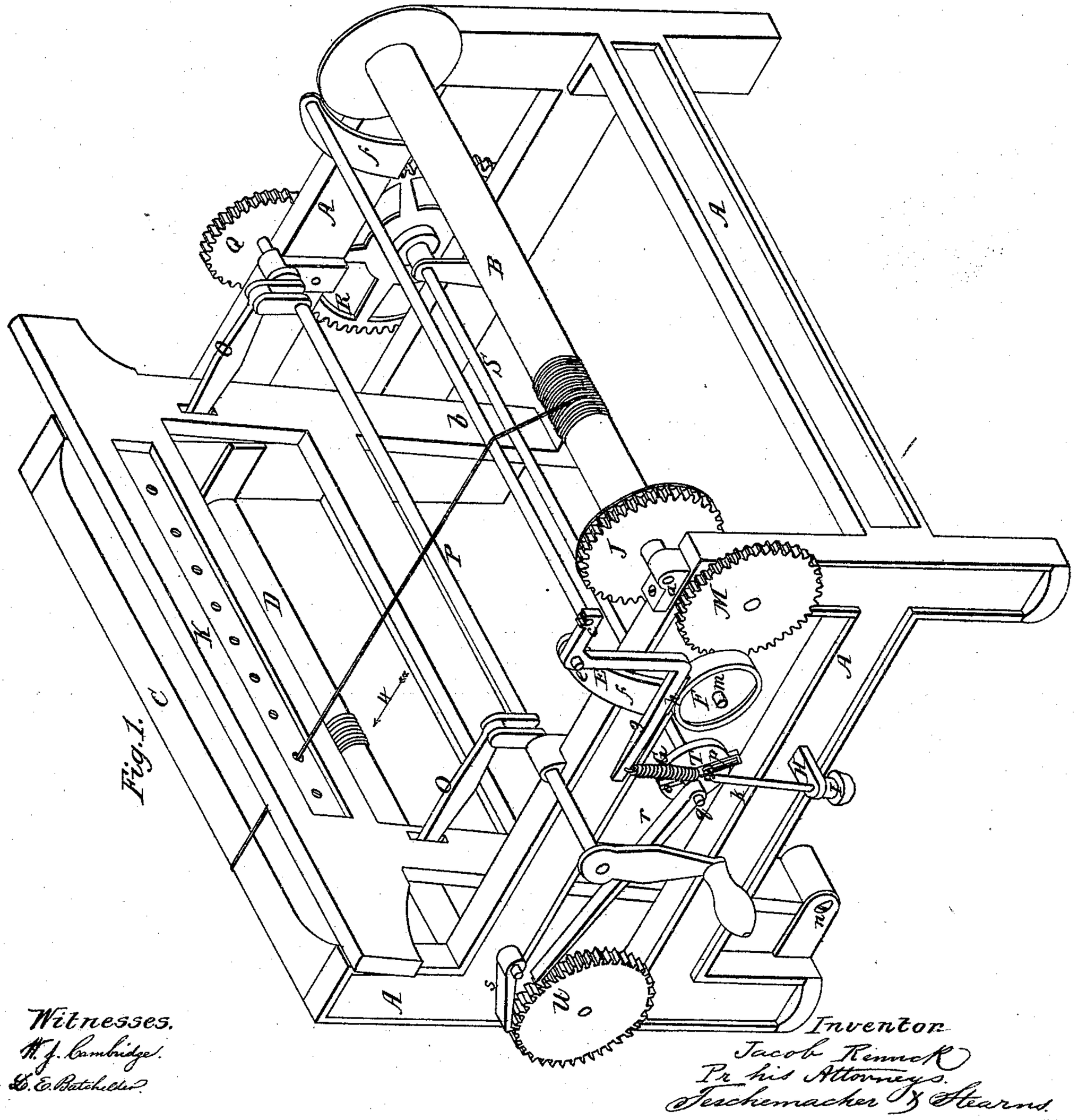

Fig. 1.

Witnesses.
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Fig. 3.

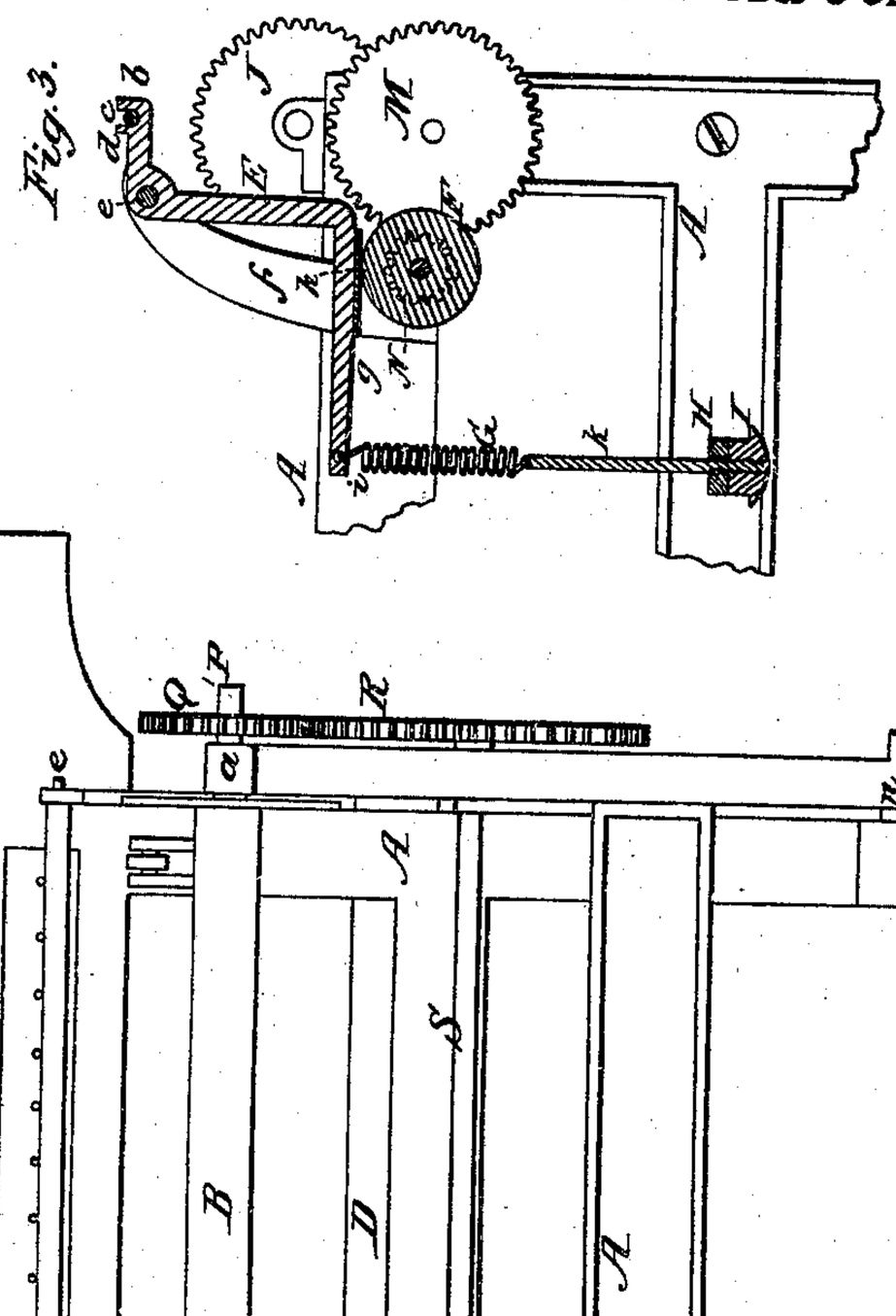
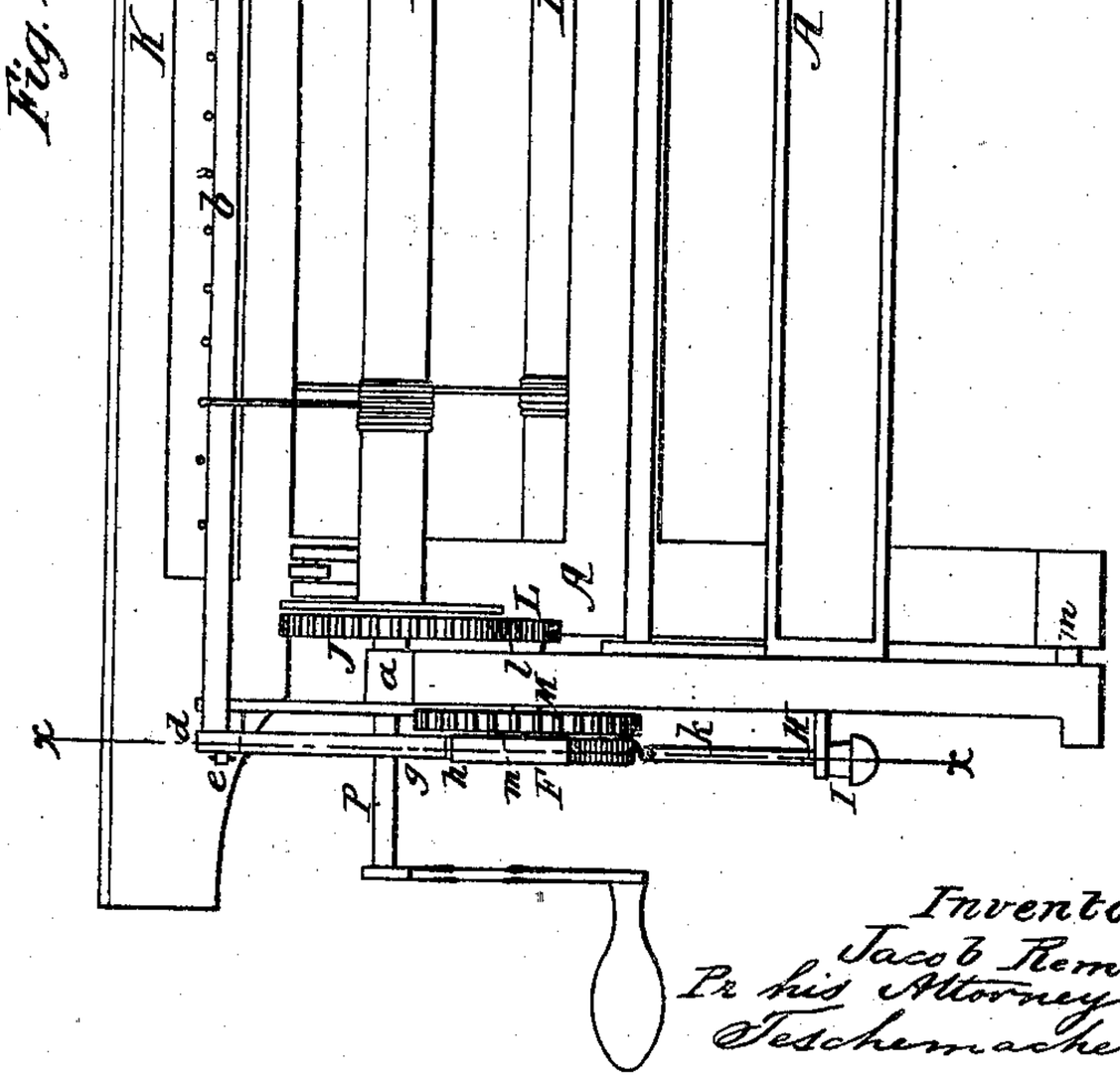


Fig. 2.



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United States Patent Office.

JACOB REMICK, OF NEWBURYPORT, ASSIGNOR TO AMOS L. WOOD AND JOSIAH G. ABBOTT, OF BOSTON, MASSACHUSETTS.

Letters Patent No. 70,265, *dated October* 29, 1867.

IMPROVEMENT IN LET-OFF FOR LOOMS.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, JACOB REMICK, of Newburyport, in the county of Essex, and State of Massachusetts, have invented an improved Let-Off Motion for Looms, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a perspective view, representing the framework and a portion of the mechanism of a loom with my improved let-off motion applied thereto.

Figure 2 is a rear elevation of the same.

Figure 3, a section on the line *x x* of fig. 2.

The delivery of the yarn from its beam is governed entirely by the tension of the warp, and is effected by the return-motion of the lay after beating up the filling, the forward beat of the lay serving to take up the fabric after being woven.

To provide a means whereby the exact amount of the warp may be let off, and the degree of its tension regulated by the action of the loom, is the object of my invention, which consists in conducting the yarn over a guide or whip-roller, supported in bearings in one end of a bent arm or lever pivoted to the framework, or to standards arising therefrom, the other end of the lever being pressed in contact with a friction-wheel by a spring when the lay is beating up the filling, thus producing sufficient friction to prevent the revolution of the yarn-beam by which the friction-wheel is operated, the return of the lay increasing the degree of tension of the warps, and causing the whip-roll to be depressed in its yielding bearings against the resistance of the spring, thereby overcoming the pressure of the other end of the lever on the friction-wheel, and allowing the yarn-beam to be revolved sufficiently to let off the amount of yarn desired.

To enable others skilled in the art to understand and use my invention, I will proceed to describe the manner in which I have carried it out.

In the said drawings, A is the framework of a loom in suitable bearings *a*, in which revolves the beam B, around which is wound the yarn, which is led over the whip-roll *b*, and through the reeds of the lay to the weaving-point, the woven fabric passing in the usual way over the breast-beam C to the take-up roll D. One extremity of the whip-roll turns freely in an open bearing, *c*, in the upper end *d* of a bent arm or lever, E, pivoted at *e* to a standard, *f*, secured to the framework, the opposite extremity of the whip-roll being loosely pivoted to a similar standard, *f*. The under side of the lower end *g* of the lever is provided with a pad or cushion, *h*, which, when the tension of the yarn is increased in a manner hereafter to be explained, is pressed down upon the surface of a drum or friction-wheel, F, by a spring, G, the upper end of which is secured at *i* to one end of the lever E, while the lower end of the spring is connected to a vertical rod, *k*, passing through a stud, H, projecting from the framework, and is provided with a screw-thread, upon which turns a nut, I, for the purpose of regulating the tension of the spring as required.

The connections between the warp-beam B and the friction-wheel F, and the manner in which the friction of the pad *h* is relieved therefrom, will now be described.

J is a cog-wheel, secured to the outer end of the warp-beam, which is revolved when the tension of the warp is increased by the return motion of the lay K, and drives a pinion, L, on the inner end of a short shaft, *l*, which carries a cog-wheel, M, on its outer end, which gears into a pinion, N, (seen dotted in fig. 3,) on a stud, *m*, upon which the friction-wheel F revolves. The lower ends of the lay K are pivoted to the framework at *n*, the upper ends of the lay being connected by rods O to the cranks of the driving-shaft P, by which the necessary vibrations are produced. One end of the driving-shaft carries a cog-wheel, Q, which engages with a cog-wheel, R, on a shaft, S, to which is secured a disk, T, provided with a groove, *o*, within which slides a block, *p*, from which projects a pin, *q*, to which is secured one end of a pawl, *r*, the other end of which actuates a ratchet-wheel, U, the sliding block being provided with a slot and screw, whereby it is made adjustable in its disk T, thus increasing or diminishing the leverage of the pawl *r*. *s* is a retaining-pawl, for preventing the revolution of the wheel U in the wrong direction. The shaft to which the wheel U is secured carries a pinion, which engages with a cog-wheel on the end of the cloth or take-up roll D.

As the crank-shaft P revolves, and the lay K moves forward in the direction of the arrow 4 to beat up the

filling at each alternate motion, the actuating-pawl *r* turns the wheel U around a distance equal to that between two of its teeth, and through the connections already explained causes the take-up roll D to revolve as required. At the proper moment during the return of the lay, which moves in the arc of a circle, the yarn is pressed thereby, and the required amount let off from its beam in the following manner: The increased tension of the yarn causes the whip-roll *b* to be borne down with its yielding bearings sufficiently to raise the end *g* of the bent lever E and its pad *h* from off the friction-wheel F against the resistance of the spring G, when, on the friction being removed, the yarn-beam is free to make a partial revolution, the amount of yarn delivered at each alternate beat of the lay being exactly equal to the amount which was just previously taken up, and the tension of the warps will always be the same at the moment the lay is beating up.

Instead of the lever E, spring, G, friction-wheel F, etc., being employed at one end only of the whip-roll, like mechanism may be employed at both ends of the whip-roll, if preferred.

The intermediate wheel M, with its pinion L, may be dispensed with, and the pinion N, on the same shaft with the friction-wheel F, engage directly with the wheel J on the end of the yarn-beam, without departing from the spirit of my invention; but I prefer the construction first mentioned.

The portion of the mechanism for regulating the let-off may be reversed, if desired, the whip-roll being supported in the lower end of the lever E, and the spring G being secured to its upper end, in which case the yarn-beam would be placed over the whip-roll, and the yarn conducted down under it instead of over it, as herein shown and described.

Claim.

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

The combination of the whip-roll *b*, in the bent arms or levers E, with the springs G, adjustable rod *k*, friction-wheels F, and warp-beam B, all constructed and arranged substantially as and for the purpose set forth.

JACOB REMICK.

Witnesses:

SAMUEL ESTES,

JOSEPH G. GERRISH.