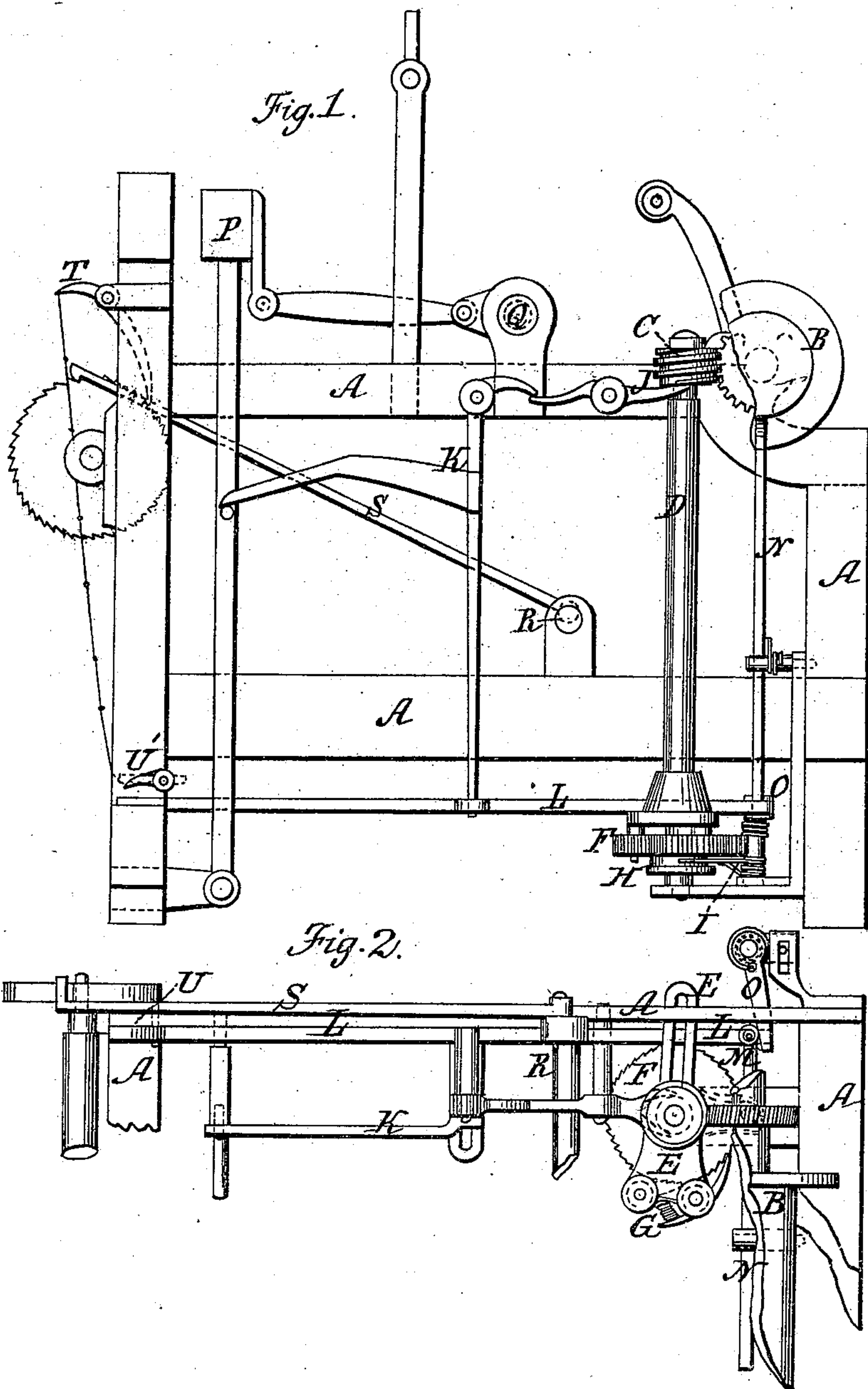


STOCKWELL & HUMES.

Let-Off Motion for Looms.

No. 34,451.

Patented Feb. 18, 1862.



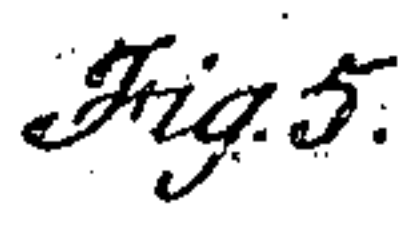
Witnesses.
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UNITED STATES PATENT OFFICE.

ALBERT STOCKWELL AND B. D. HUMES, OF MILLBURY, MASSACHUSETTS.

IMPROVEMENT IN LOOMS.

Specification forming part of Letters Patent No. 34,451, dated February 18, 1862.

To all whom it may concern:

Be it known that we, ALBERT STOCKWELL and B. D. HUMES, of Millbury, in the county of Worcester and State of Massachusetts, have invented new and useful Improvements in Looms; and we do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

Our invention consists in a peculiar combination for producing and regulating the tension of the yarn and the delivery of such yarn from or by the yarn-beam, such combination being applied to the lay and a "positive take-up motion," and made to operate therewith, substantially as hereinafter specified; also, in the combination of a pawl and rack or their mechanical equivalent with the yarn-delivering and taking-up machinery, the same being for the purpose of effecting the stoppage of the delivery of the yarn, as hereinafter explained.

To enable others skilled in the art to make and use our improvements, we will proceed to describe their construction and operation.

Figure 1 is an end sectional elevation or view of sufficient of a loom to show our improvements; Fig. 2, a top view of parts of the same; Fig. 3, an end elevation of the loom; Fig. 4 exhibits detached parts of the same with the beam in position to more perfectly show the mechanism for regulating the delivery and tension of the yarn. Fig. 5 is a top view of the friction-wheel and spring, to be hereinafter described.

A is the loom-frame; B, the yarn-beam, the latter on one end being provided with a worm-gear, in which a worm C engages. This latter is fitted to an upright shaft D by a feather-connection so as to be capable of being slid vertically on the shaft as well as being revolved by it.

E is a slotted arm or lever having the shaft D for its fulcrum and carrying two pawls *a* and *b* for operating a ratchet-wheel F.

G is a helical spring arranged between the heel of the pawl *b* and the toe of the pawl *a*, in order to press the pawls into close contact with the ratchet-wheel.

H is a friction-wheel attached to the shaft D, and being spanned by a furcated spring-

brake I, which acts against the periphery of such wheel, as shown in Fig. 5, and serves to prevent the backward revolution of the shaft D.

J is a forked lever, which directly under and against the worm C spans the shaft D and operates in conjunction with a tri-armed lever K, arranged as shown in Fig. 1. One arm of the lever K rests on one arm of the lever J, while another extends over and upon a pin projected from a sword of the lay P. The third arm of such lever K enters a slot in a slide-bar L, arranged as shown in Figs. 1, 2, and 4. A link M connects one end of the bar L with one arm of a right-angular lever N, whose fulcrum is situated near to the yarn-beam, and so that the arm of the said lever may rest against the periphery of the yarn on the beam, as shown in Fig. 4, it being pressed against the same by a spring suitably applied to the lever and its fulcrum.

O is a tension-arm pressed by a spring against the adjacent end of the slide L, the same being as shown in Fig. 4.

P is the lay, while S is the draft-pawl resting on the ratchet of the cloth-beam and serving with such ratchet and an operative crank applied to the crank-shaft of the loom to constitute the usual positive take-up motion or mechanism.

T is a retaining-pawl applied to the said ratchet.

U is a lever pawl or dog placed over a rack of teeth formed in the bar L and held up by a rod jointed to it and the pawl-lever T, the whole being as shown in Fig. 1. Whenever the pawl T is raised off its ratchet, either by hand or otherwise, in order to arrest the rotary motion of the cloth-beam, the pawl or dog U will drop into the teeth on the bar L and stop the let-off at once, although the loom continues to make two or three picks, which it invariably does.

In the drawings, P denotes the lay, Q the crank-shaft, and R the "cam-shaft," they being such as are common to looms for weaving.

To operate the loom, turn the crank-shaft, and as that is connected to the cam-shaft by gears it will move the arm that operates the cloth-beam and commence drawing the yarn from the yarn-beam, which will force the worm down on the shaft and move the lever J, which

moves K, that operates the bar L, which is connected to the slotted arm or lever E, that moves the pawls back on the ratchet-wheel, and as the lay comes back to the position shown in the drawings it will force the pawls forward, and thus turn the worm-shaft, which will turn the yarn-beam, and as the yarn on the beam decreases in size, with one end of the lever N resting against it and the other attached to the link M, which connects it with the bar L, it will draw the bar toward the center of the shaft D and give more motion to the pawls *a* and *b*, and continue to do so as the beam decreases in size. Consequently the beam will continue to increase its motion on its axis as it decreases in size without increasing the motion of the bar L or the worm C up and down on the shaft, and as O is the tension-arm with a spring pressing hard against the bar L to give the tension of the yarn, and as the decreasing of the beam in size draws the bar toward the center of the shaft it draws it away from the center of the arm O, so that the resistance to the beam lessens as the beam decreases in size, thereby securing uniform tension and delivery of yarn from the beam.

What we claim, and desire to secure by Letters Patent, is—

1. The peculiar combination for producing and regulating the tension on the yarn and the delivery of such yarn by the yarn-beam, such combination being applied to the lay and the positive take-up motion and made to operate therewith, substantially as specified, and to consist of devices as follows: first, the lever N, forced by a spring against the yarn on the beam and connected with the slide-bar L by a link M; second, the tension-arm O, operated substantially as set forth; third, the slide-bar L, the rocker-lever E, with its pawl-and-ratchet mechanism, the shaft D, the levers K J, the movable worm C and its gear as applied to the yarn-beam.

2. The combination of the pawl U and its rack, with the yarn-delivering and taking-up mechanisms constructed in manner and so to operate, substantially as specified.

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