G. P. ROSE, A. CARTWRIGHT & B. S. ROSE.

Let-off Mechanism for Looms.

No. 161,443. Patented March 30, 1875.

FIG-1-

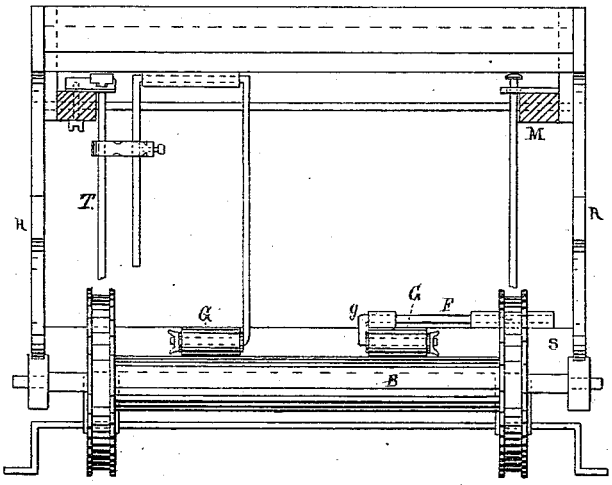


FIG-3-

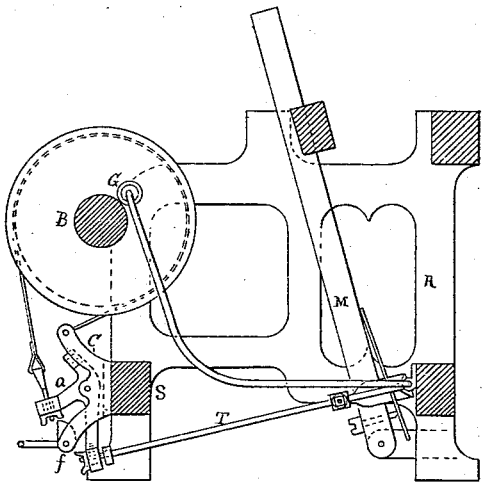
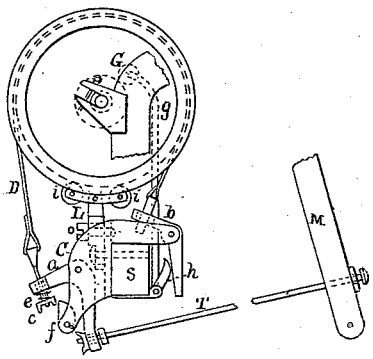


FIG-2-



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GEORGE P. ROSE AND ABEL CARTWRIGHT, OF SLOCUMVILLE, AND BENONI S. ROSE, OF LAFAYETTE, RHODE ISLAND.

IMPROVEMENT IN LET-OFF MECHANISMS FOR LOOMS.

Specification forming part of Letters Patent No. **161,443**, dated March 30, 1875; application filed February 1, 1875.

To all whom it may concern:

Be it known that we, GEORGE P. ROSE and ABEL CARTWRIGHT, of Slocumville, and BENONI S. ROSE, of Lafayette, in the county of Washington and State of Rhode Island, have invented certain Improvements in Looms; and do hereby declare the following to be a full and correct description thereof, reference being had to the accompanying drawings, making part of this specification, and to the letters and numbers of reference marked thereon, similar letters and numbers being used in all the figures to denote the same part.

In these drawings, Figure 1 is a top view, Fig. 2 is an end view of the beam B and standard C, showing the connections with the other parts of the loom; and Fig. 3 is a modification of the improvements.

Our invention relates to a new and novel mode of arranging, combining, and making let-off motions for looms; and its object is to give a uniform tension to the warp, so that the decrease in the amount of yarn on the beam shall not increase the strain on the warp; and consists in combining with the friction-strap on the head of the beam an arm with a roller or pad, bearing against the yarn on the beam, thereby regulating the tension of the strap as the size of the beam decreases. The above combination, operating with the sword of the lathe to hold the warp firm against the beat-up, and in arranging a rod and cam, so as to relieve the beam of the friction-strap when necessary; and, lastly, in an adjustable standard with self-adjusting friction-rolls to hold the weight of the yarn-beam.

A is the frame; B, the yarn-beam, hung in bearings in the ends of the frame. A standard, C, is secured to the back girt S. Two knee-levers, *a b*, are pivoted to this standard, to which levers the outer and inner ends of the friction-strap D are respectively attached. A spiral spring, *e*, is placed on the rod that connects the outer end of the strap to the lever *a* between the lever and a screw-nut, *c*, used to regulate the tension of the friction-strap. A rocker-shaft, F, is supported in bearings on the inside of the back girt S, with an upright arm, *g*, on its inner end, to which a roller or pad, G, is attached on its upper end, so as to rest against the yarn on the beam. On the other end of the rock-shaft F a curved arm or cam, *h*, is fastened, so adjusted, that it shall press against the lower arm of the lever *b*. A rod, T, connects the lower end of the lever *a* with the lathe-sword M, through which it slides freely up to the head of the rod, the length of the rod being made adjustable by means of a screw-thread and nuts on the other end. A cam, *f*, is hung on a pivot to the lower end of the standard C, and when turned in it holds the lower end of lever *a* in position to keep the tension on the friction-strap; but when turned back the strap is slackened and the yarn-beam can be easily turned in either direction. An adjustable standard, L, is secured by a bolt, *o*, through a slot near its lower end, to the standard C on back girt S. A self-adjusting frame with two friction-rolls, *i i*, is pivoted to the top of this standard to take the weight of the yarn-beam off of its bearings, and to relieve them of the shock and strain that would otherwise be thrown on them when the friction-strap is tightened up by the lathe beating up the filling, especially in weaving heavy goods. The inner end of the friction-strap may be fastened directly to the curved arm or cam *h*, thereby dispensing with the lever *b*.

The operation is as follows: When the yarn-beam is full and the warp has the greatest leverage over it, the roller resting on it, holds the rocker-shaft over, so that the cam, pressing against the lower end of the lever *b*, draws on and tightens the friction-strap, so that the beam shall not turn too easily; but, as the quantity of yarn on the beam diminishes, the roller falls in and allows the rocker-shaft to turn the cam from the lever *b*, and the tension on the friction-strap is thereby lessened in proportion as the yarn diminishes, thus making the tension the same from beginning to end. The operation of the rod T is to draw on the lower end of the lever *a*, and this tightens the friction-strap, when the lathe comes forward to beat in the filling, and immediately letting it back to its usual tension, as the lathe returns, and the harnesses form the shed.

It will be perceived that the effect of the position of the roller G also extends to the

regulating of the firmness with which the warp is held when the lathe beats up, thereby producing a great uniformity in the laying up of the filling. Instead of connecting the rod T with sword M, it may be operated by a cam on a shaft of the loom.

Having thus described our improvements, what we claim as our invention is—

1. The combination of the arm *g*, rock-shaft F, cam *h*, lever *b*, strap D, and lever *a*, operated by the lay or any moving part of the loom, with the beam B, all operating together, substantially as and for the purposes set forth.

2. The combination of the beam B, arm *g*, cam *h*, lever *b*, strap D, and lever *a* with the cam *f*, all operating together, substantially as and for the purposes described.

3. The combination of the cam *f*, lever *a*, and friction-strap D with the beam B, substantially as and for the purpose specified.

4. The combination of the adjustable standard L with the pivoted friction-rolls *i i* and beam B, substantially as and for the purpose set forth.

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