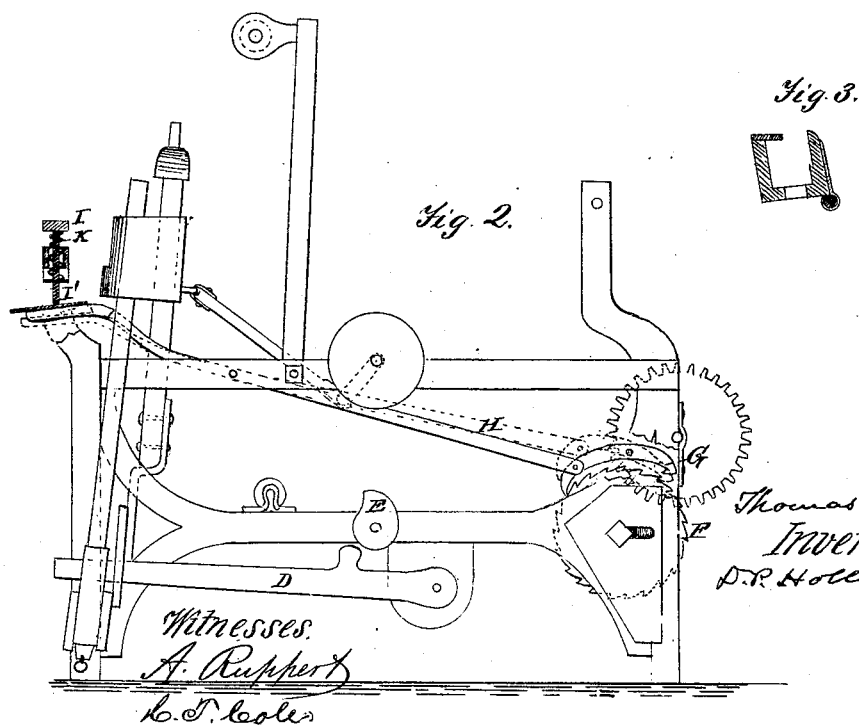
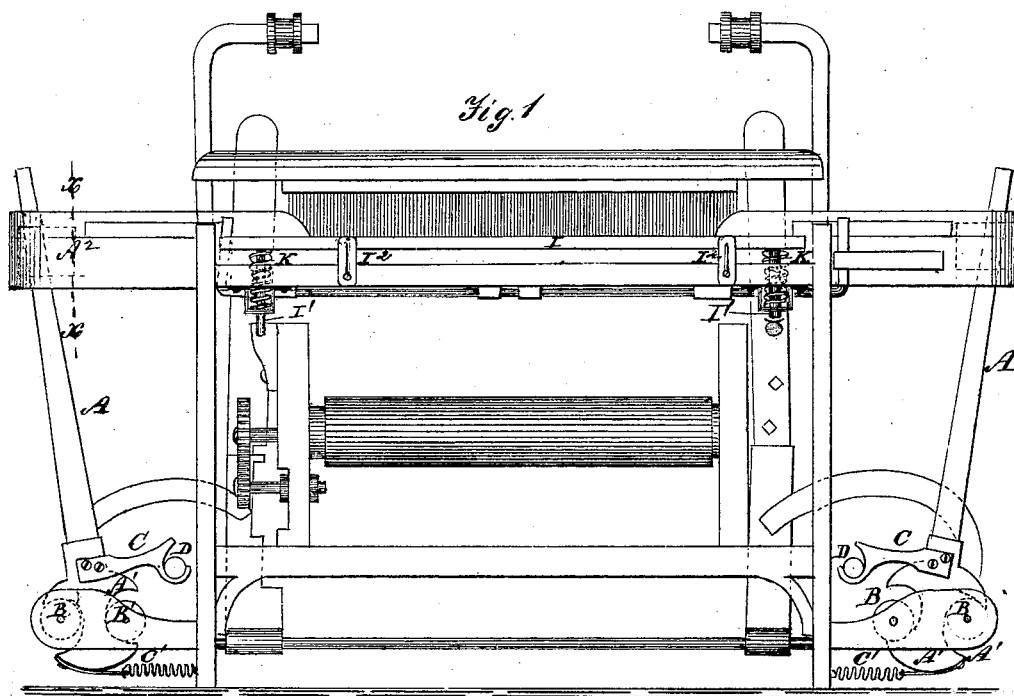


THOMAS GORRELL.

### Improvement in Let-Off Mechanisms for Looms.

No. 114,667.

Patented May 9, 1871.



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# United States Patent Office.

THOMAS GORRELL, OF WARREN, RHODE ISLAND.

Letters Patent No. 114,667, dated May 9, 1871.

## IMPROVEMENT IN LET-OFF MECHANISMS 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, THOMAS GORRELL, of Warren, in the county of Bristol and State of Rhode Island, have invented certain new and useful Improvements in Looms; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the annexed drawing making part of this specification, in which—

Figure 1 is an end or front elevation.

Figure 2 is a side elevation partly in section.

Figure 3 is a section on the line *xx*.

The same letters are employed in both figures in the designation of the same parts.

My improvements relate to the mechanism for throwing the shuttle, and to the let-off mechanism; and consist—

First, in an arrangement of the picker staff, which causes the shuttle to be delivered in a straight horizontal direction; and

Secondly, in the use of a positive mechanism for regulating the let-off device, thereby insuring the regular and certain unwinding of the yarn from its roller.

In the annexed drawing—

The oscillating picker-staffs *A A* are placed on each side of the loom to throw the shuttle from side to side by their alternate action.

The picker *A*<sup>2</sup> comes into contact with the shuttle, and as it is rigidly attached to the staff *A* and moves in parallel and horizontal grooves or guides, it is necessary that the oscillating arms should have a different motion from that which would be imparted to them if pivoted at the lower end and swinging in the arc of a circle, for the part *A*<sup>2</sup> must move in a right line and horizontally.

To accomplish this it is supported between two cylindrical rollers, *B B*. The rollers bear against elliptical faces cut in the enlarged end, *A*<sup>1</sup>, of the picker-staff *A*, as shown in fig. 1.

An arm, *C*, is extended from the staff *A*, and against it bears a lever, *D*, which, being pivoted to the frame of the loom, is operated by a cam, *E*, attached to and revolving with the main driving-shaft.

The disposition of the cams *E E* is such that at each revolution of the main shaft the picker-staff *A* on each side of the loom will be quickly thrown forward to drive the shuttle through the race alternately from each end.

As the picker-staff moves forward from the position shown in fig. 1, it rests at first on the outermost of the rollers *B*, turning on its surface, and gradually falling until it reaches the center of oscillation, when the bearing is transferred to the other roller, on which it gradually rises until the stroke is completed.

By this means a horizontal movement in a right line is communicated to the picker *A*<sup>2</sup>, and without the

intervention of straps or other complicated devices in common use.

The picker-staff, thrown forward by the arm *C*, is retracted by means of the spring *C* when the arm *C* is released.

The warp being wound on the yarn-roller, it is desirable to let it off as fast as the cloth is woven and taken up upon the cloth-roller and no faster. This I accomplish in the following manner:

The ratchet-wheel *F* is fastened on a counter-shaft receiving motion by means of spur-wheels from the yarn-roller. The escapement *G* is pivoted so that it shall engage at each end alternately with the teeth of the ratchet-wheel. The rod *H* is bolted to the escapement *G*, and extended forward to a point under the breast-beam. The latter carries above it a horizontal beam, *I*, the dependent arms, *I*<sup>1</sup>, of which play in apertures formed in the breast-beam. The arms *I*<sup>1</sup> are encircled by springs *K*, which rest upon brackets on the breast-beam, and bear against the under side of the beam *I*, so as to hold it up when not acted upon by the movement of the cloth. The upward movement of the beam *I*, caused by the reaction of the springs, is limited by the length of the slots in the plates *I*<sup>2</sup>, which are secured to the beam *I*, and play on studs of the breast-beam, as shown in fig. 1. One of the dependent arms *I*<sup>1</sup> is so arranged in relation to the rod *H* that with each vertically-reciprocating motion of the beam *I*, caused by the movements of the cloth as it is depressed in the shedding operation, the rod *H* will be pressed down by the arm *I*<sup>1</sup>.

As the rod *H* is pivoted to a fulcrum on the frame of the loom, as well as to the escapement, each movement of the cloth which depresses the front end of the lever *H* will raise the escapement and allow the ratchet-wheel to turn forward just one notch, and so the yarn will be let off by a precisely regulated and positive feed.

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

1. The picker-staff *A*, the part *A*<sup>1</sup> of which is constructed substantially as set forth, in combination with the cylindrical rollers *B*.

2. The combination of the warp-beam, ratchet, escapement, and lever *H* with the yielding bar *I* arranged on the breast-beam, and governed by the tension of the passing cloth, and adapted substantially as described to let off the warp.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

THOMAS GORRELL.

Witnesses :

B. EDW. J. EILS,  
A. RUPPERT.