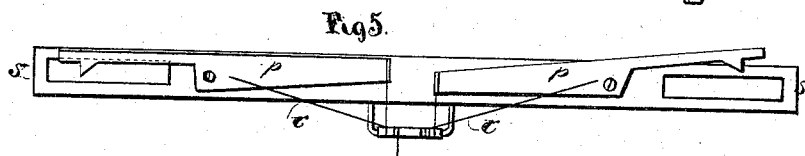
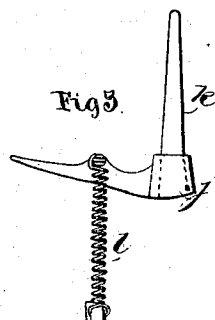
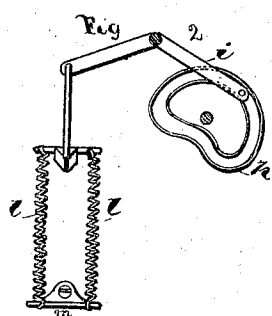


### Loom-Picking Mechanism.

Patented April 15, 1873.



H. E. Matthews.

L. E. Ross by  
Dyer, Beadle & Co.  
attys.

# UNITED STATES PATENT OFFICE.

LESTER E. ROSS, OF PROVIDENCE, RHODE ISLAND.

## IMPROVEMENT IN LOOM PICKING MECHANISMS.

Specification forming part of Letters Patent No. **137,798**, dated April 15, 1873; application filed November 5, 1872.

*To all whom it may concern:*

Be it known that I, LESTER E. ROSS, of Providence, in the county of Providence and State of Rhode Island, have invented a new and useful Improvement in Shuttle-Motion for Looms; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawing and to the letters of reference marked thereon.

This invention relates to a shuttle-actuating mechanism for looms; and its novel features consist mainly, first, in the combination of the picker-staff, rocker, and supporting-beam, with a lever, cam, and actuating-springs; second, in the combination of the rocker, its actuating-springs, and a rocking bar holding the springs.

In the drawing, Figure 1 represents a perspective view of a loom having my improvements attached thereto. Fig. 2 represents a side elevation of the bell-crank lever and springs; Fig. 3, a side elevation of the rocker-foot and springs; Fig. 4, a front elevation of the bell-crank lever, showing the friction-roller; and Fig. 5, a plan view of the lay-beam reversed.

*a a a a* represent the frame-work of the loom. *b* represents the main shaft, to one end of which motion is communicated from any suitable source. *c c* represent pitmen or connecting-rods, united at one end to a crank upon the main shaft *b*, and at the other to the lay-beam *d*, by which means the latter receives its reciprocating movement. *e* represents a gear-wheel attached to the other end of shaft *b*, which engages with the gear-wheel *f* upon one end of the shaft *g*, which is hung in suitable bearings in the frame-work, as shown. *h h* represent cam-wheels located near each end of the shaft *g*, and provided with cam-grooves formed in the line of a perfect circle for about one-half of their extent, and having their lines for the remaining distance curved abruptly toward the center and out again to the circumference, as shown. *i* represents a bell-crank lever, hung upon a stud or bearing projecting from the frame-work, one end of which is provided with a stud or pin, upon which a friction-roller is placed, which is adapted to travel in the groove of the cam-wheel *h*. The other

end of the bell-crank lever is united, by means of a strap or other flexible connection, to the inner end of an arm attached to the rocker of the picker-staff. The rocker *j* rests loosely upon a brace bolted to and extending from the sword of the lay-beam. The bearing-face of the rocker is formed in the arc of a circle struck from the center of the shuttle-box, when the picker-staff is in a vertical position. The toe of the rocker, however, is preferably made flat. The rocker is held from displacement by means of pins upon either side at its outer end, which rest in the slots of the side pieces *j'*, as shown. *k* represents the picker-staff, rigidly secured in a socket at the outer end of the rocker *j*, the upper end of said picker extending into the shuttle-box in the usual manner. *l l* represent spiral springs, connected at their upper ends in any suitable manner to the rocker *j* at or near the toe, and below to a bar or block, *m*, pivoted to the lower beam, as shown. *n n* represent small cams rigidly attached to the cam-shaft *g* near its center upon opposite sides, as shown. *o o* represent the treadles, which operate the harnesses to open the shed. They are pivoted at one end at any suitable point upon the frame-work, and have their free ends united, by means of a strap or other flexible connection, to the inner ends of the latch-levers *p p*, the straps passing over suitable pulleys *q q*, as shown. The latch-levers *p p* are pivoted to the under side of the lay-beam, and have their outer ends provided with shoulders adapted, when in their natural position, to hold the picker-staffs, as shown. *r r* represent springs, by means of which the latch-levers are returned to their proper place after releasing the picker-staff. *s s* represent the shuttle-boxes of usual construction.

The operation of the loom is as follows: Motion is communicated to the main shaft *b* in any proper manner, the revolution of which gives motion to the lay-beam through the connecting-rods *c c*, and also to the cam-shaft *g* through the gear-wheels *e f*. The revolution of the cam-shaft *g* actuates the cams *h h*, which give an upward motion, by means of the bell-crank lever *i*, to the rocker, and consequently a backward motion to the picker-staff, which latter, when thus moved, is held in position

for the stroke by the shoulder of the latch-lever. After the picker-staff has been thus moved to place, the bell-crank lever *i* is returned to its former position by the continued revolution of the cam, this result being permitted by the flexible connection uniting the front ends of the bell-crank lever to the arm of the rocker foot, by which means the rocker-foot is left free to move its entire distance when the picker-staff is released without being restrained by the bell-crank lever. The movement of the rocker has drawn out the springs, which have consequently a tendency to retract and throw forward the picker-staff. This tendency, however, is restrained by the latch-levers, as before described, until the treadles fully open the shed, when the latch-levers are operated to free the picker-staff and throw the shuttle. The revolution of the shaft *g* also actuates, by means of the cams *n n*, the treadle-levers *o o*, which open the shed, and at the proper moment operate the latch-levers and free the picker-staff, which is thus permitted to drive the shuttle by means of the contraction of the springs.

From this description it will be understood that the picker-staff is moved against the force of the springs to its proper position to throw the shuttle, and is thus held until the proper time, when the latch-lever is operated to release it, when it is moved violently forward by the action of the springs.

Some of the features herein shown possess great value. The combination and arrangement of the cam and bell-crank lever for drawing the picker-staff back and expanding the springs is especially advantageous, because, as the springs are expanded and consequently an increased amount of power required, the cam

draws the lower end of the bell-crank lever toward the shaft, thereby gaining leverage, and consequently diminishing the amount of power taken from the loom, thus reducing the amount of power that would otherwise be required to operate the loom. The construction of the rocker *j*, loosely placed upon the brace and held in place by means of the pins and slotted side pieces, is advantageous, because by this means the picker-staff is caused to strike the shuttle such a blow as will send it properly across the loom; the picker-staff in its course moving forward in a line slightly inclined upward, so that the rear end of the shuttle is slightly elevated, and its forward end consequently kept tight to the race. The rocker and picker-staff also can be removed at any time by detaching the springs and lifting it from its place. By the employment of the springs in connection with the rocking block an equal strain is borne by each spring in every position of the lay.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination of the rocker *j* and its supporting-beam with the lever *i* and cam *h* and actuating-springs, all constructed and arranged as described.

2. The combination of the rocker *j*, the actuating-springs *l*, and the rocking bar *m*, as described.

This specification signed and witnessed this 2d day of November, 1872.

LESTER E. ROSS.

Witnesses:

H. E. MATTHEWS,  
COLUMBUS CHOATE.