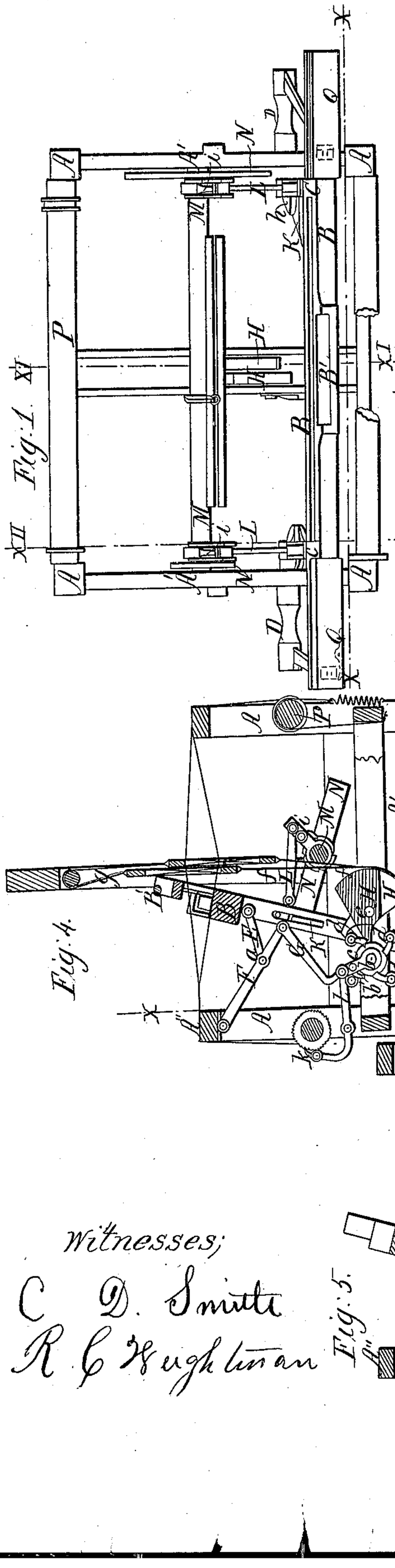
# Deen, Bolding & Perry.

## Hand Loom.

No. 63,143. Patented Mar. 26, 1867.

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# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN HAND-POWER LOOMS.

Specification forming part of Letters Patent No. **63,143**, dated March 26, 1867.

*To all whom it may concern:*

Be it known that we, J. M. DEEN, W. B. BOLDING, and H. PERRY, all of Dayton, in the county of Washington and State of Iowa, have invented certain new and useful Improvements in Hand-Power Looms; and we do hereby declare the following to be a full, clear, and exact description of the same, sufficient to enable one skilled in the art to which the invention appertains to make use of it, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a plan or top view of our improved hand-power loom. Fig. 2 is a sectional elevation on the line *x x* of Figs. 1, 3, and 4. Fig. 3 is an end elevation. Fig. 4 is a section on the line XI XI of Figs. 1 and 2. Fig. 5 is a section in XII XII of same figures.

In all the figures like parts are indicated by the same letters of reference.

The nature of our invention consists in so constructing and arranging the mechanism of a hand-power loom that the operation of the treadles and the consequent shifting of the harness, the necessary movement of the picker-staffs to insure the effective throw of the shuttle, and the revolution of the cloth-beam to take up the fabric as it is woven, shall be governed by the action of the batten, and be at all times within the control of the weaver.

In the drawings, A A A′ A′ are the posts and beams constituting the frame of a hand-power loom. A″ is the breast-beam. B is the batten, along the upper surface of which is the shuttle-race, terminating at each end of the batten in a tube or gallery, into which the shuttle is alternately thrown.

A handle, B′, is constructed on the top of the batten for convenience in operating.

The batten is sustained by two standards, C C, attached at the lower ends to, and free to vibrate with, the rock-shaft D D, having their bearings in the beams A′ A′ of the frame, through which they extend to a distance nearly equal to the length of the batten.

To the under side of the batten is jointed a connecting-rod, E, which is jointed at its other end to the lever F by the joint-pin *a*.

The lever F has its fulcrum on the under side of the breast-beam A, and at its lower end is jointed to one end of the lever G. The other end of the lever G is jointed to a bridle carrying a feed-hand, *b*. (See Figs. 3 and 4.) This feed-hand gives motion to a ratchet-wheel, *c*, having its circumference divided into from three to six teeth.

The ratchet-wheel *c* is fast upon a shaft, which may carry from three to six pairs of wipers, *d*, furnished at their extremities with friction-rollers.

The treadles H H vibrate on the shaft *e*, and are moved alternately by the wipers *d* as these, in their revolution, come in contact with the inner ends of the treadles, which may also be from three to six in number, to suit the requirements of different fabrics.

The ends of the treadles opposite to the wipers are arcs of a circle, having their center at *c;* and attached to each treadle is a strap, *f*, the upper ends of which straps are attached to the harness-frame, a frame to each treadle. The frames themselves are connected by a strap, *g*, which passes from one, over a pulley or shaft, to the other.

It will be evident that as the inner end of one treadle is lifted by its wiper, the harness-frame that is attached to it will be pulled down, and the other harness-frame will be pulled up by the strap *g*, the strap *f* on the lifted frame causing the inner end of its treadle to be depressed so as to be operated in turn by its wiper. This movement, it will be seen, must take place while the batten is being vibrated toward the breast-beam, the position of the harness-frames being unchanged by moving the batten toward them.

The rock-shafts D D support at their extremities the picker-staffs I I, which are jointed to the rock-shaft, so as to have a vibratory motion in the plane of the axis of the rock-shaft as well as with the batten.

The picker-staffs project up into the galleries or shuttle-boxes at the ends of the batten, and are each attached to a block, which moves with them to and fro in the boxes. The picker-staffs are each also connected by a slack strap or cord to the tumblers K K. These tumblers are so attached to the standards C C as to vibrate upon centers *h*, and project each of their hooked ends through an opening in each of the standards, or be

thrown in toward the operator. Their office is to cause the picker-staffs to throw the shuttle alternately from one side to the other of the loom, and they are operated as follows:

To each of the standards C is attached, by a joint, a lever, L, connected at its other extremity with a bridle and feed-hand, *i*, which give motion to the shaft M through the ratchet N, each of which is divided into four teeth. At each end of the shaft M is an arm, N, of two limbs, the arm at one end being placed at right angles with the arm at the other end. The teeth of the ratchet and the feed-hand are so arranged that the shaft M is caused to make a quarter-revolution each time that the batten is moved toward the harness, and the arms are so set on the shaft that one end of each of them alternately is brought up in close proximity to the outer face of one of the standards C, and under the hooked end of a tumbler, K. This is made to happen just before the batten has arrived at the end of its vibration toward the harness, when the final movement of the batten causes the arm to quickly throw the tumbler in toward the operator, the strap or cord which is attached to the picker-staff causing, by a sudden jerk, the block in the shuttle-box to strike smartly against the shuttle, driving it through the warp to the other end of the shuttle-race, where it comes in contact with the head of the other picker-staff, which it forces to the end, and, through the slack strap or cord, causes the other tumbler, K, to resume a position to be acted on by the arm N on the other end of the shaft M the next time that the batten is moved toward the harness, when the operation will be repeated as first described.

The roller or cloth-beam on which the woven material is received as it is completed is furnished with a ratchet, operated by a feed-hand, K. This feed-hand may be made adjustable on the end of a lever, *l*, having its fulcrum at *m*, which lever, in turn, is connected by a jointed link to the bar *n*, made adjustable on one of the standards C by means of a slot and set-screw, *o*. It will be seen that as the distance from the inner end of the lever *l* to the center of motion of the standard C is increased or diminished by the bar *n* and set-screw *o*, so will the amount of motion vary that may be given to the cloth-beam. The feeding occurs while the batten is moving toward the breast-beam.

The shaft M and the roller P, from which the warp is carried through the harness, are each kept from turning too freely, or from a liability to turn back, by pressure from a strap, which, secured firmly at its lower end to the frame-work of the loom, passes over or around a collar on the shaft and roller, and is attached to a weight or spring by its other end.

The movement of the batten toward the breast-beam actuates the treadles to shift the harness, and causes the woven fabric to be gathered on the roller that receives it, while the movement toward the harness causes the picker-staffs at the end of the movement to drive the shuttle on its errand, which it accomplishes while the batten is at rest, and before it returns toward the breast-beam.

At each end of the shuttle-race is a dumb-latch, Q, (see Figs. 1 and 2,) which, being pivoted on its center, is so operated by the head of the picker-staff, when the shuttle strikes against it, as to catch against the side of the shuttle as it arrives at the end of its throw, and holds it so that it cannot rebound or move until it is struck again by the head of the picker-staff to be sent back.

Having described our invention, what we claim therein as new, and desire to secure by Letters Patent, is—

1. Operating the treadles H H by means of the levers F and G, jointed connecting-rod E, the feed-hand *b*, and ratchet *c*, with the wipers *d*, arranged and combined with the batten B, in the manner and for the purpose set forth.

2. The levers L, feed-hand *i*, shaft M, and arms N, in combination with the tumblers K, picker-staffs I I, and batten B, substantially as and for the purpose set forth.

The above specification of our improvements in hand-power loom signed this 11th day of June, 1866.

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Witnesses:
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