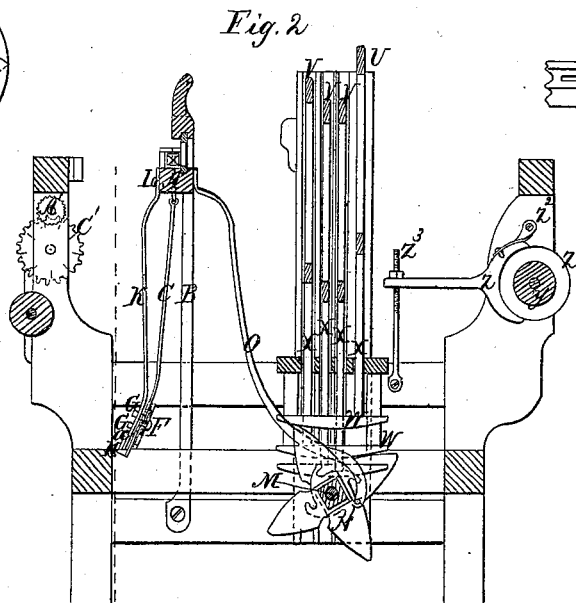
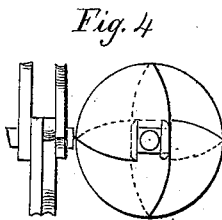
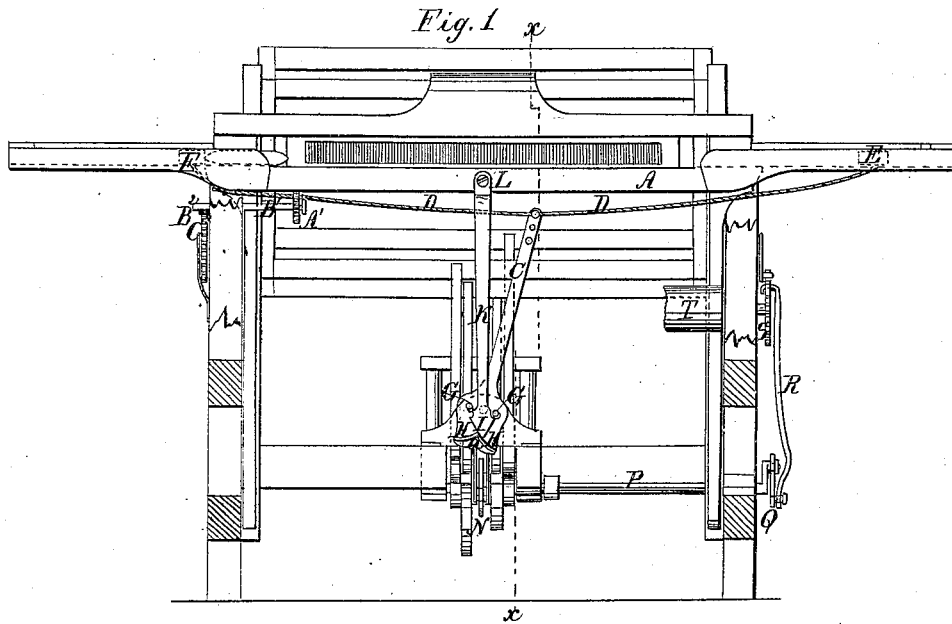


Wareham & Waggoner. Hand Loom.

N^o 107,313.

Patented Sept. 13, 1870.



Witnesses
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ELIAS A. WAREHAM AND WILLIAM H. WAGGONER, OF KIRKVILLE, IOWA.

Letters Patent No. 107,313, dated September 13, 1870.

IMPROVEMENT IN MECHANISM FOR OPERATING THE PICKERS OF 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 we, ELIAS A. WAREHAM and WILLIAM H. WAGGONER, of Kirkville, in the county of Wapello and State of Iowa, have invented a new and useful Improvement in Hand-Looms; and we do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification.

My invention relates to looms, and consists of an improvement in connection with the picker-staff, which will be hereinafter described in connection with all that is necessary to a full understanding thereof, and then clearly specified in the claim.

Figure 1 represents a front view of our improved loom, partly in elevation and partly in section.

Figure 2 represents a sectional elevation, taken on the line *x x* of fig. 1.

Figure 3 is a plan view of one of the shuttle-boxes; and

Figure 4 represents, in front and side elevations, an arrangement of cams for producing cloth twilled on both sides, such as we propose to use in substitution of those represented in the machine, and to adapt for being readily so changed.

Similar letters of reference indicate corresponding parts.

A represents the race-beam of the lay, and

B, the sword-arm, arranged in the usual way.

C is the picker-staff, arranged at the center, and connected by cords D to the pickers E, so as to operate both.

This staff is pivoted at F to a suitable support rising up from the frame, and is considerably enlarged around the pivot to support the pins G and the cam-shaped projection H, to be acted on by the double-hooked and pointed end I of a bar, K, connected at L to the race-beam, so that, by the movement of the said beam back and forth, the hooked end of the said plate has a slight rising and falling movement upon the enlarged part of the picker-staff, between the pins and against the cam projection acting alternately on each side of the said cam projection, and against the pins.

In the drawing, fig. 1, the staff is represented as having been moved last to the right, whereby the point *a* of the cam projection is moved to the left, so that when the point I moves down again at the forward movement of the lay it will be carried, by its point acting on the right side of the point *a* of the cam, to the right, so as to engage the hook *b* under the right-hand pin G, whereby, when the lay is moved back, the upward movement of the bar K will throw

the staff C over to the left, and, on the next downward movement of the said bar K, the pointed end will be carried down the left side of the point *a* of the cam projection H, and will engage with the pin G on that side in a similar way, throwing the staff back again, and so on, while the lay is continued in motion.

The cam-shaft M is provided with a hooked wheel, N, having as many hooks as there are cams, and this wheel is acted upon by a pawl, O, connected to the rear side of the lay-beam, and arranged to move forward on the said wheel when the lay moves back to engage by a hook or pin with one of the hooks of the said wheel N for turning it forward when the lay moves forward.

To this cam-shaft, which I propose to arrange in its bearings, so as to be readily removed for the substitution of other shafts with other arrangements of cams, for instance, that represented in fig. 4, I couple on, in any preferred way, a short extension, P, running to the outside of the frame, where it is provided with a crank, Q, and connecting-rod or pawl R, adjustably connected to the said crank by a slotted bar moving the wrist-pin back and forth.

This pawl engages, at the other end, with the ratchet-wheel S, on the cloth-beam, by which the latter is moved for taking up the cloth.

For the purpose of producing a uniform action of the cams on the heddle-frames U, which work in vertical guides V, and must necessarily stand each in a different plane relatively to the plane of the axis of the cam-shaft, I provide shoes, W, at the lower ends of the bars X, extending from the heddle-frame to the cams.

These shoes are of uniform length, and all arranged in the same relation to the axis of the cam-shaft, whereby the rise and fall of each heddle-frame will occur in the same order in respect to the movement of the cams or other parts of the loom.

The tension of the warp-beam Y is produced by a friction-brake, Z, consisting of a lever, grooved at one end to fit the periphery of a friction-rim, Z', on the roll, and connected by a pivot-joint, Z², to the frame, the other end being provided with a temper-screw, Z³, passing through it, and screwing down upon said end to increase the friction on the rim Z', or to release the same by unscrewing to allow the brake to rise.

Below the breast-beam we have arranged a wheel, A', with pointed teeth, to press against the cloth as it moves from the breast-beam to the take-up roll, so as to be turned by the cloth.

The outer end of the shaft of this wheel is provided with a single tooth, B², gearing with a large toothed wheel, C', which may have a greater or lesser number of teeth, and a scale graduated to the teeth and the

wheel A', in any preferred way, so that the number of yards wound upon the roll can be ascertained at any time from the said scale.

The shuttle-binder consists of a round block, *b*¹, fig. 3, let into a recess in the side of the shuttle-box, and connected to a spring, *b*², so secured in the said side that the block will be pressed through the opening of the recess into the shuttle-box sufficiently to press the shuttle when received into the box against the opposite side.

These blocks are slotted at *b*³, and pins are arranged in the box to rise up through the slots, so as to control the blocks against the tendency of the shuttles to force the blocks in the direction of their movement

either way, while allowing them to oscillate freely to and from the race.

Having thus described our invention,

We claim as new and desire to secure by Letters Patent—

The combination, with the picker-staff, provided with the pins G and cam projection H, and supported on a pivot, as described, of the double-hooked and pointed bar K, connected to the lay, all substantially as specified.

E. A. WAREHAM.

WM. H. WAGGONER.

Witnesses:

JAMES STEPHENSON,

JAS. N. PAGE.