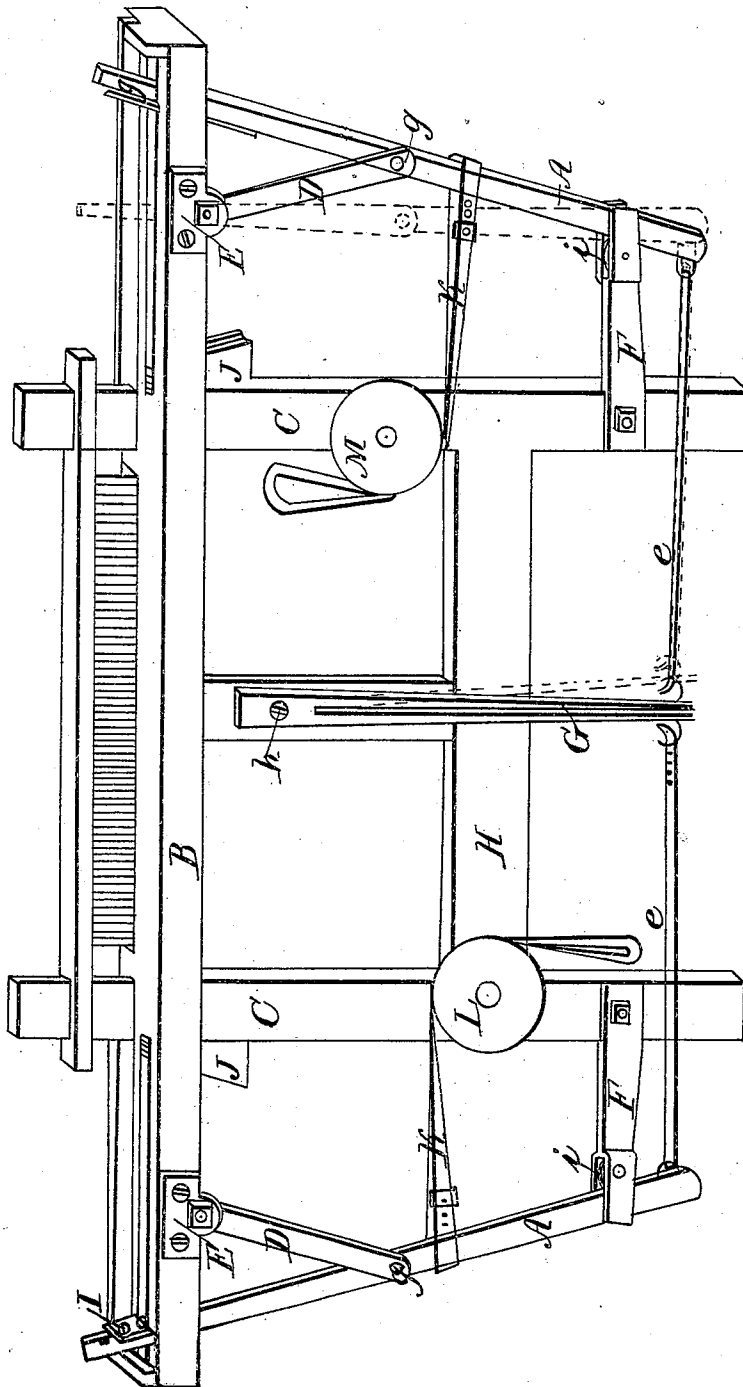


W. Dutcher.
Shuttle Motion.

N^o 4,606.

Patented Jun. 27, 1846.



UNITED STATES PATENT OFFICE.

WARREN DUTCHER, OF BENNINGTON, VERMONT.

LOOM.

Specification forming part of Letters Patent No. 4,606, dated June 27, 1846; Reissued April 21, 1857, No. 454.

To all whom it may concern:

Be it known that I, WARREN DUTCHER, of Bennington, in the county of Bennington and State of Vermont, have invented a new and useful Improvement in Looms, and that the following is a full, clear, and exact description of the principle or character thereof, which distinguishes it from all other things before known, and of the manner of making, constructing, and using the same, reference being had to the accompanying drawing, making part of this specification, which is a perspective view of my improvement applied to the lay of a loom.

The usual method employed of driving the shuttle is by means of pickers that slide on rods attached to the shuttle boxes, and driven by staffs connected with them by means of leather cords; and an attempt has been made to improve this by dispensing with the pickers and driving the shuttle by the end of the staffs; and to avoid the difficulty arising from the fact that the end of the staff that strikes the shuttle describes a circle in its vibration, instead of having the staffs to turn on a joint at the lower end, they are each provided with a rocker that rocks on a platform, the curve of the rockers being such as to make that end of the staffs that strikes the shuttle move in a line parallel with the race board, and to keep the rockers onto the platform links jointed to the rockers and to the platform have been employed; these however are objectionable as they necessarily cause the rocker to slide on the platform, and do not effectually keep them thereon.

This obvious defect I avoid by my improvement which consists in connecting each driving staff with the shuttle box by means of a joint link jointed to the shuttle box and to the staff about the middle of its length; the staff also rests against a roller near its lower end to admit of its moving up and down, and to answer the purpose of a fulcrum for drawing back the staff by means of a strap attached to a spring and to the end of the staff below the roller. The lower end of the two staffs being connected together by the same spring the tension of which is so regulated that when one staff is thrown back it has strength enough only to carry back the other staff about half way,

where it remains until the shuttle is driven back which distends the spring and causes this staff to move back as the shuttle reaches it and which therefore gradually arrests it.

In the accompanying drawings (B) represents the race board, (C) the swords and (H) the cross bar connecting them in the usual manner.

(A) are the driving or wag staffs the upper ends of which pass through and move freely in slots in the bottom of the shuttle boxes, that part which is intended for striking the shuttle being armed with some appropriate elastic material as at (I, I). Toward their lower end they play between the prongs of arms (F, F), and rest against rollers (*i, i*) to admit of their playing up and down freely as their upper ends vibrate—these rollers being their fulcra. These staffs are connected with the shuttle boxes each by a link (D) jointed to the shuttle box at (E), and to the staff at (*g g*), so that as the upper end of the staff vibrates it is kept in a line parallel with the race board, and hence in the line of the motion of the shuttle, the link compensating on the same principle as the well known parallel motion. The lower ends of these staffs below the rollers (*i, i*) are connected together by cords (*c c*) with a spring (G) of any kind interposed the tension of which tends to draw their upper ends from each other. The staffs can be operated to drive the shuttle by any of the known means such as a strap (*k*) attached to each and to the treadles or levers and passing over a roller (M); but any other mode may be substituted.

The interposed spring (G) turns freely on a pin at (*h*) so as to act with equal force on the two staffs in any position in which they may be placed. When they are both thrown back as represented in the drawing the spring is not under tension, and if one of the staffs is placed in a vertical position, as indicated by dotted lines, the tension should not be sufficient to carry it back; but as the other staff is moved toward it, in driving the shuttle, the tension of the spring is increased and then moves it back as the shuttle approaches it—this gradually arrests the momentum of the shuttle and avoids much of the jar which otherwise would take place. It will be obvious from

the foregoing that any kind of spring may be substituted for the one represented in the drawings.

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

1. Combining the driving or wag staffs with the shuttle boxes by means of the joint links, as herein described for the purpose of causing the end that drives the shuttle, without a picker to move parallel with the race board, or nearly so during its vibration, substantially as described.

2. And I also claim connecting the lower

end of the two staffs below their fulcra by means of a spring having an intermittent action for drawing them back, in combination with the application of a positive motion above for driving the shuttle, whereby the returning staff aids in arresting the momentum of the shuttle, substantially as herein described.

WARREN DUTCHER.

Witnesses:

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