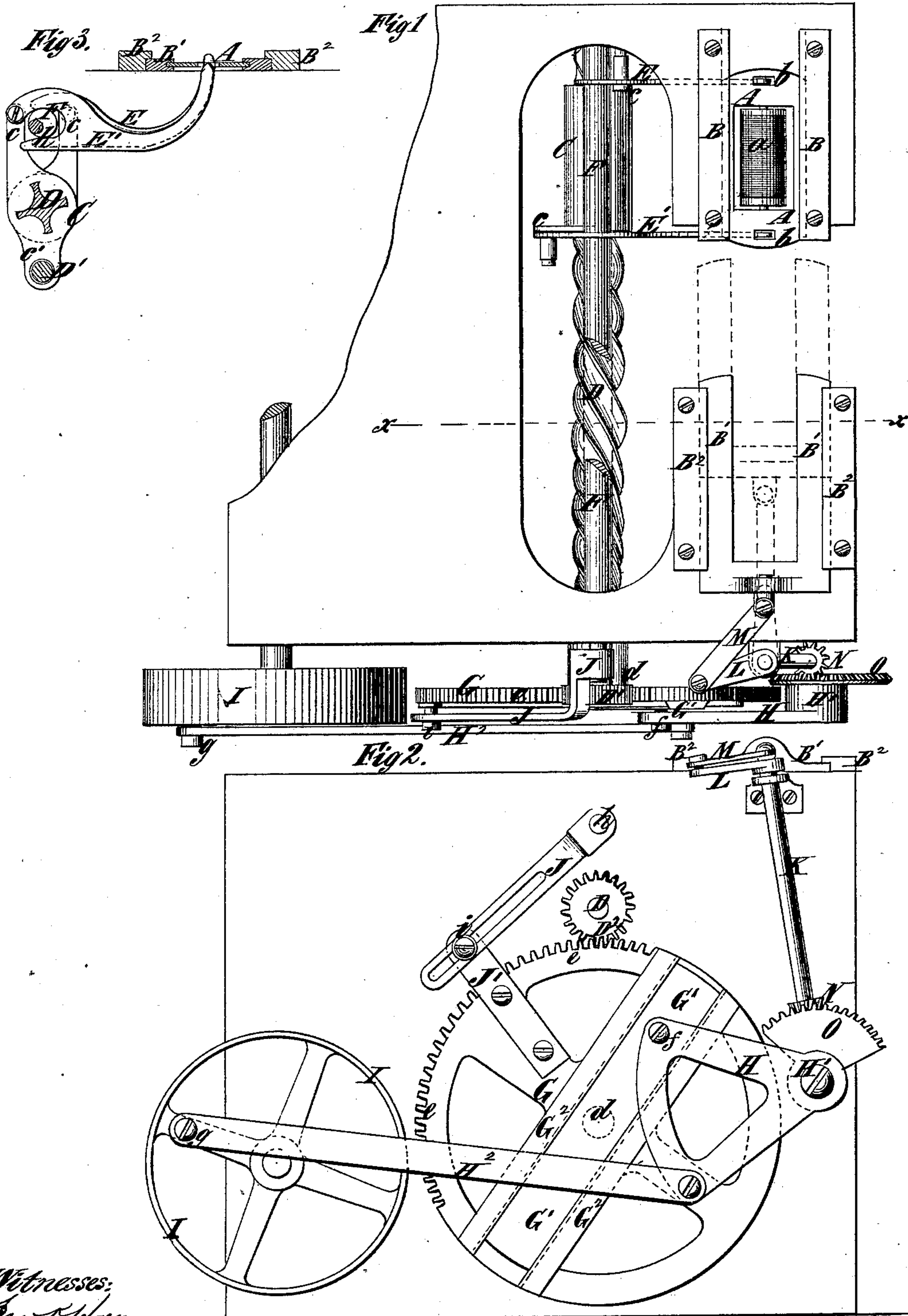


T. A. WEBER.
Shuttle Motion for Looms.

No. 232,319

Patented Sept. 14, 1880.



Witnesses:
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UNITED STATES PATENT OFFICE.

THEODORE A. WEBER, OF NEW YORK, N. Y., ASSIGNOR TO ALFRED FAULKNER, OF JERSEY CITY; SAID FAULKNER ASSIGNOR OF ONE-HALF OF HIS RIGHT TO JOSEPH BURTON, OF NEWARK, N. J.

SHUTTLE-MOTION FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 232,319, dated September 14, 1880.

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To all whom it may concern:

Be it known that I, THEODORE A. WEBER, of the city, county, and State of New York, have invented certain new and useful Improvements in Shuttle-Motions for Looms, of which the following is a specification.

This invention relates more especially to looms for weaving narrow fabrics in which the shuttle-driver is fitted with fingers which are alternately engaged with and disengaged from the shuttle to project the latter alternately in opposite directions through the shed, the finger which is passing the warp being always disengaged from the shuttle while the other one is engaged therewith.

The object of my invention is to provide a shuttle-motion in which a suspension of motion at the ends of the stroke and an acceleration of motion at and near the middle of the stroke are produced in a simple manner.

My invention consists in the combination, with the shuttle-driver and a screw to which said driver is connected and by which it is reciprocated, of an oscillating lever and mechanism connecting said lever with said screw for operating the latter, a slide fitted to said lever, and mechanism connected to said slide for oscillating said lever.

It also consists in the combination, with the shuttle and shuttle-driver provided with fingers for engaging with the shuttle, of a shaft or bar having eccentric journals and mechanism for oscillating said shaft or bar to effect the engagement of said fingers with and their disengagement from said shuttle.

It further consists in the combination, with the shuttle, mechanism for reciprocating the same, and a raceway, a portion of which is movable longitudinally, of a novel arrangement of mechanism for imparting motion to the said movable portion of the raceway.

In the accompanying drawings, Figure 1 represents a plan of the shuttle-driving mechanism of a loom embodying my invention. Fig. 2 is an end view thereof; and Fig. 3 is a transverse section of certain parts thereof on the dotted line *xx*, Fig. 1.

Similar letters of reference designate corresponding parts in all the figures.

A designates a loom-shuttle carrying a spool or bobbin, *a*, and adapted to be reciprocated in a raceway composed of two portions, B B', between the adjacent ends of which the lay beats up and the shed is formed.

C designates the shuttle-driver, consisting of a nut fitting upon a screw, D, to which is imparted an alternate movement in opposite directions for the purpose of reciprocating the shuttle-driver C upon it.

E E' designate fingers extending from the shuttle-driver C and engaging with openings *b* in opposite ends of the shuttle. These fingers are pivoted to lugs *c*, extending upwardly from the shuttle-driver C, upon opposite sides thereof, and are so constructed that they embrace a shaft or bar, F, arranged over the screw D, upon which the said fingers rest.

A rod or bar, D', is arranged below the nut or driver C, and the latter is represented as provided at each end with flanges *c'*, which embrace the said rod or bar and steady and guide the driver C.

G designates an oscillating lever provided with a geared sector, by which the screw D is revolved alternately in different directions. As here represented, this lever is mounted upon a shaft, *d*, (shown dotted in Fig. 2,) and as having connected to it a toothed sector, *e*, engaging with a pinion, D², mounted on the end of the screw D.

G' designates a slide, represented as arranged in gibs G² on the face of the oscillating lever G, and adapted to be moved back and forth in said gibs.

H designates a bell-crank lever, which is pivoted at H' to the side of the loom, and which in this instance serves to transmit motion to the slide G', to which it is connected by a bolt, *f*. To the other arm of said bell-crank lever is connected a connecting-rod or pitman, H², the other end of which is represented as supported on a crank-pin, *g*, in this instance fixed in the arm of a pulley, I.

A belt may be used for imparting motion to the pulley I, thereby to effect the reciprocation of the shuttle-driver.

As the shuttle-driver approaches the end of its stroke the arc described by the bolt *f* in the

bell-crank lever H is nearly parallel with the motion of the slide G', and hence the oscillation of the lever wheel or disk G is much slower. By this means the shuttle is brought to a gradual stop at the end of each stroke, and hence the parts of the loom are relieved of the violent shock resulting from the sudden stoppage of the shuttle.

In order to effect the engagement of the fingers E E' with and their disengagement from the shuttle A, I have shown the shaft or bar F, upon which they rest, as supported on eccentric journals *h* at its ends, (shown clearly in Fig. 3,) and as the said fingers are pivoted on opposite sides of the shaft or bar F, the oscillation of the said shaft or bar will alternately lower and raise the fingers E E', so as to permit the passage of the shuttle through the shed, one finger always being in engagement with the shuttle.

J designates a slotted lever fixed to the outer end of the shaft or bar F, and J' designates an arm fixed to and actuated by the oscillating lever G. At its outer end the arm J' carries a pin, *i*, which engages with the slotted lever J, and through it actuates the shaft or bar F.

It is obvious that by moving the crank-pin *g* nearer the center of the pulley I the length of movement of the shuttle might be varied, and that by making the pin *i* adjustable in the arm J' the amount of oscillation of the shaft or bar F might be varied.

The portion B' of the shuttle-raceway is movable, as clearly represented in Fig. 1, and as the shuttle starts from the position there shown to move through the shed the movable raceway B' moves forward into the open shed to the position shown in dotted outline, receives the shuttle, and moves back to the position shown in full outline.

B² designates guides for the movable portion of the raceway in its movements.

The mechanism here represented for reciprocating the movable portion B' of the raceway consists of a shaft, K, provided at its upper end with a crank, L, which is connected to the raceway by means of a link, M. The lower end of the shaft K carries a pinion, N, which is in engagement with a sector, O, fixed to the bell-crank lever H and oscillating with the latter. By altering the length of the crank L the movement of the movable race-

way might be varied to suit fabrics of different widths.

By my invention I provide a loom which may be run very fast, because of the small and light shuttle and because of the gradual stoppage of the shuttle at the end of its stroke.

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

1. The combination, with the shuttle-driver and a screw to which said driver is connected and by which it is reciprocated, of an oscillating lever and mechanism connecting said lever with said screw for operating the latter, a slide fitted to said lever, and mechanism connected to said slide for oscillating said lever, substantially as specified.

2. The combination, with the shuttle-driver and a screw to which said driver is connected and by which it is reciprocated, of a pinion arranged on said screw, an oscillating lever, G, having a toothed arc or sector engaging with said pinion, a slide, G', fitted to said lever, a bell-crank lever, H, connected to said slide, and mechanism for oscillating said bell-crank lever, substantially as specified.

3. The combination, with the shuttle and shuttle-driver provided with fingers for engaging with the shuttle, of a shaft or bar having eccentric journals and mechanism for oscillating said shaft or bar to effect the engagement of said fingers with and their disengagement from said shuttle, substantially as specified.

4. The combination of the shuttle-driver C, provided with the fingers E E', for engaging with the shuttle, the shaft or bar D, having eccentric journals, the slotted lever J, arranged on said shaft or bar, the oscillating lever G, provided with the arm J', having a pin for engaging with the lever J, and mechanism for operating said oscillating lever, substantially as specified.

5. The combination, with the shuttle A, of the movable raceway B', the oscillating shaft K, provided with a crank, L, and pinion N, mechanism for actuating said shaft, and the link M, connecting said crank with said movable raceway, substantially as specified.

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Witnesses:

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