(No Model.)

H. THIELE.

LOOM HEDDLE FOR CROSS WEAVING.

No. 554,845. Patented Feb. 18, 1896.

Fig. 1.

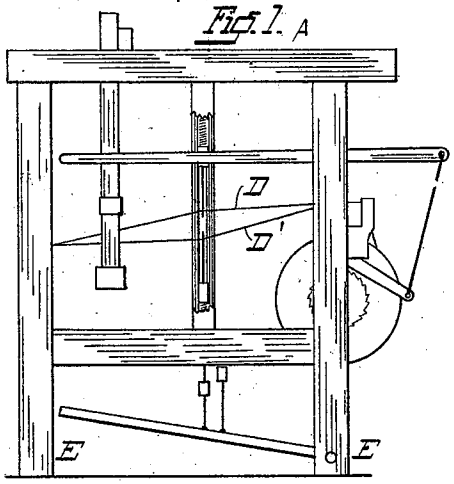


Fig. 4.

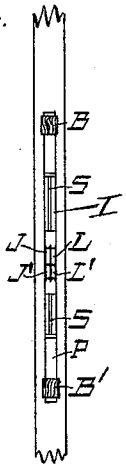


Fig. 2

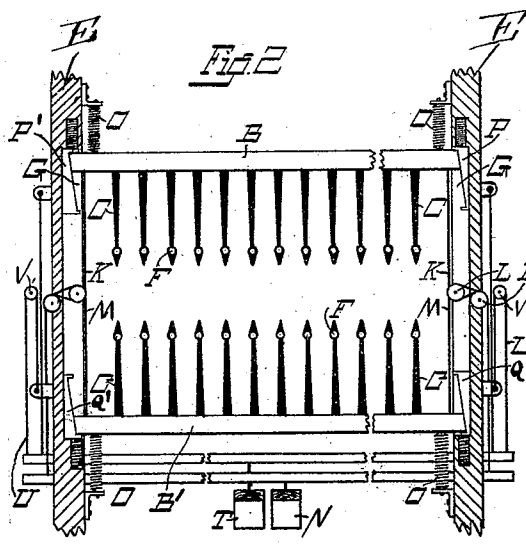
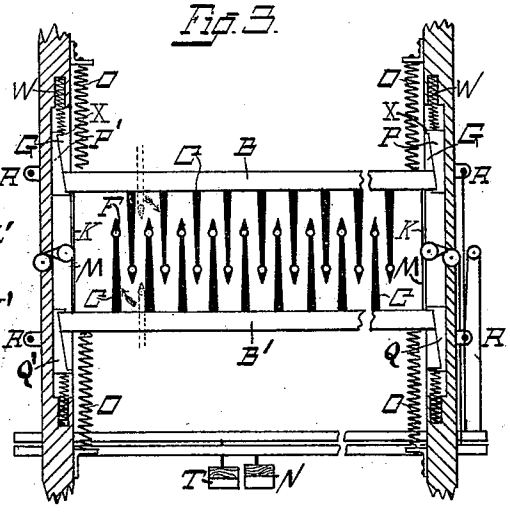


Fig. 3.



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UNITED STATES PATENT OFFICE.

HENRY THIELE, OF MILWAUKEE, WISCONSIN.

LOOM-HEDDLE FOR CROSS-WEAVING.

SPECIFICATION forming part of Letters Patent No. 554,845, dated February 18, 1896.

Application filed January 18, 1895. Serial No. 535,323. (No model.)

To all whom it may concern:

Be it known that I, HENRY THIELE, a citizen of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented new and useful Improvements in Loom-Heddles for Cross-Weaving, of which the following is a specification.

My invention relates to improvements in looms for cross-weaving, and pertains especially to the peculiar and novel construction of the heddles and the harness by which the heddles are operated, as hereinafter described.

The object of my invention is to provide a simple and durable heddle, the movement of which can be more easily controlled than heretofore.

In the drawings, Figure I is a side elevation of a loom, showing the heddles as they appear when separated to form a shed or decussation of the warp-threads adapted to permit the passage of the shuttle. Fig. II is a front elevation showing the construction and arrangement of the heddles in the harness-bars and means for actuating the latter, the heddle being separated. Fig. III is a similar view showing the completed movement of the harness as it appears when forming a reverse shed. Fig. IV is a detail of one of the guide-posts viewed from the inner side.

Like parts are identified throughout by the same reference-letters.

A is the framework of the loom. B B′ are the cross-bars of the harness. C C are the heddles; D D′, the warp-threads, and E E′ are the posts provided with guideways adapted to control the movements of the harness-bars, as hereinafter described.

The heddles C C are formed of rigid needles or points attached to the harness-bars at one end only and provided at or near their free ends with the eyes F of any ordinary construction. These heddles are attached in series to the cross-bars B and B′, those attached to the upper bar, B, being made to project downward and those attached to the bar B′ being made to project upward, as shown. The heddles of each series are entirely independent of those of the other series or of the opposite cross-bar and depend on their rigidity to maintain their appropriate positions.

The posts E E′ are provided with guideways G, into which the ends of the bars B B′ are adapted to project, and at the center of these posts I have provided a slot I, in which are located idlers J J′ for the connecting-cords K of the upper bar, B, and other idlers, L L′, for the cords M of the lower harness-bar, B′, said cords being connected with the tread N in the usual manner. The harness-bars are also connected with the machine-frame by the springs O, so that by pressing on the tread N the bars may be made to simultaneously approach each other, and on releasing the pressure they separate automatically by reason of the tension of the springs.

The ends of the guideways G are partially filled with the wedge-shaped blocks P P′ and Q Q′, so that the upper harness-bar when drawn downward along the blocks is crowded to the right and the lower bar when drawn upward along the blocks is crowded to the left, causing the threads carried by the upper and lower heddles, respectively, to cross each other; but I have also constructed the blocks P P′ and Q Q′ with rearwardly-projecting flanges R, which extend through slots S in the guide-posts and are connected to the tread T by the cords U U′. The cords U′, which are connected to the lower blocks, Q Q′, are passed over the pulleys V, so as to pull upward on the blocks when the tread is pressed downward, and the wedge-shaped blocks are connected to the frame by the springs W in the same manner as the bars B B′ are connected, thus causing them to separate automatically when the pressure is removed from the tread. These blocks are also provided with the flanges X, which project over the ends of the bars B and B′, so that when the former are drawn together the harness-bars are carried with them, moving perpendicularly in the guides. It will thus be observed that the warp-threads D and D′ can be made to cross each other in both directions by pressing the treads alternately, the pressure upon the tread N causing a lateral movement simultaneously with the vertical and the pressure upon the tread T causing a perpendicular movement of the harness-bars.

It is evident that this construction is much more simple and durable and more subject to control by the operator than in the looms heretofore used.

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

In a loom, the combination of the harness cross-bars provided with the rigid heddles having eyes in the free ends thereof, the guide-posts at the sides of the loom adapted to control the movement of the cross-bars, one or more treads and the cords connecting the same with said cross-bars and adapted to actuate the latter vertically, the wedge-shaped blocks adapted to move in said guide-posts vertically and to control the movement of said cross-bars longitudinally, one or more treads for actuating said blocks and connecting-cords for the same, together with springs connecting said blocks and bars separately with the loom-frame and adapted to hold them normally separated, substantially as described.

In testimony whereof I affix my signature in the presence of two witnesses.

HENRY THIELE.

Witnesses:
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