(No Model.)

W. G. TILLOU & J. W. CLAPP.

SHUTTLE MOTION FOR LOOMS.

No. 290,285. Patented Dec. 18, 1883.

Fig. 1.

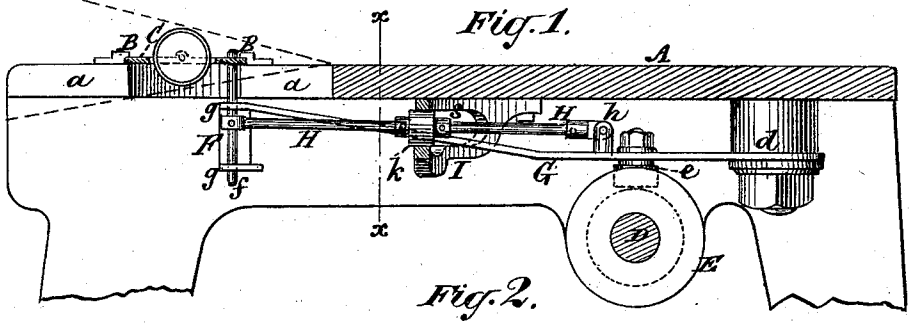


Fig. 2.

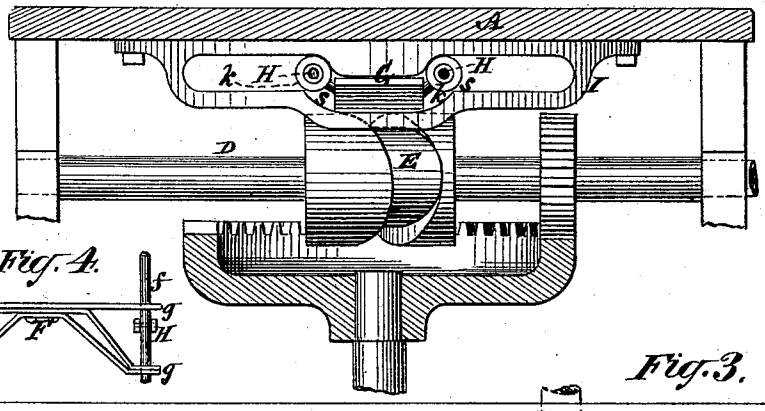


Fig. 4.

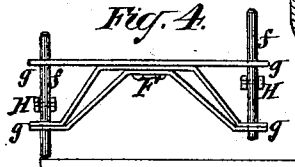
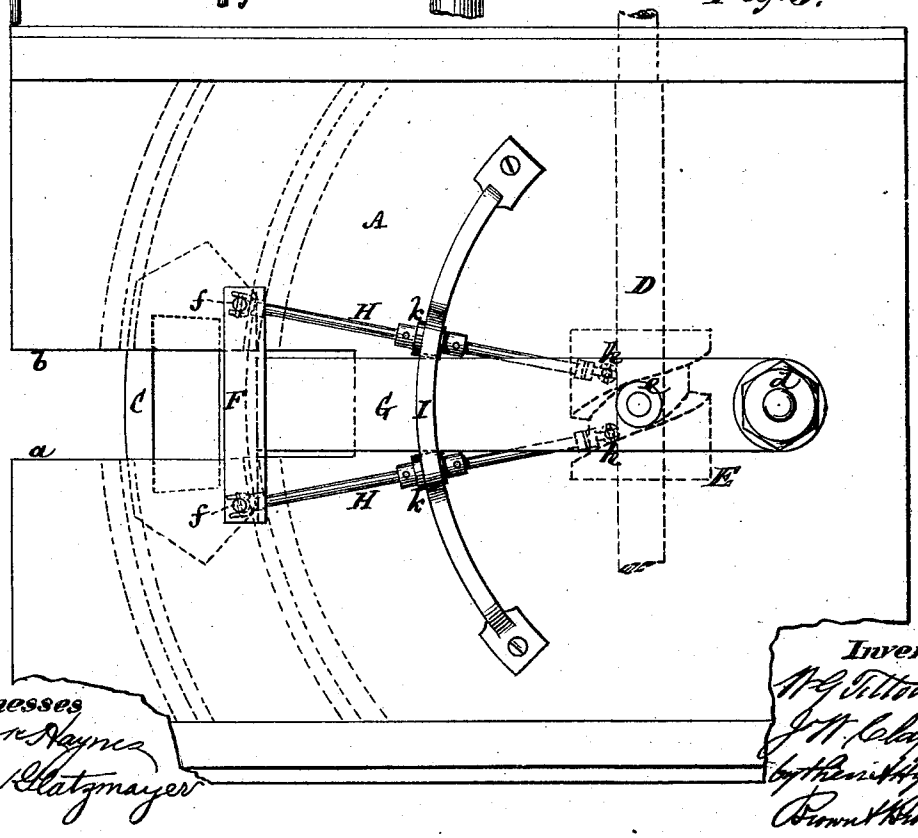


Fig. 3.



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UNITED STATES PATENT OFFICE.

WALTER G. TILLOU AND JOHN W. CLAPP, OF NEW HAVEN, CONNECTICUT, ASSIGNORS, BY DIRECT AND MESNE ASSIGNMENTS, TO CHARLES I. KANE AND ROBERT E. LESTER, BOTH OF NEW YORK, N. Y.

SHUTTLE-MOTION FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 290,285, dated December 18, 1883.

Application filed June 8, 1881. Renewed August 27, 1883. (No model.)

To all whom it may concern:

Be it known that we, WALTER G. TILLOU and JOHN W. CLAPP, both of the city and county of New Haven, in the State of Connecticut, have invented a new and useful Improvement in Shuttle-Motions for Looms, of which the following is a description, reference being had to the accompanying drawings, forming part of this specification.

This invention more particularly relates to looms for weaving narrow ware, and in which a raceway for the shuttle open both above and below is used. It has more especial reference to such description of said looms as have a curved raceway, and in which the shuttle is propelled by fingers carried by a curvilinearly-reciprocating shuttle-driver, said fingers having an independent motion in direction of their length for the purpose of causing them to engage with and disengage from the shuttle, to drive the latter and to keep them clear from contact with the warp when the shuttle is passing therethrough.

The invention consists in a combination, with a curved raceway and curvilinearly-reciprocating shuttle-driver, of a lever for actuating the latter, having its center of motion concentric with the raceway, and actuated by a rotating cam arranged in rear of the shuttle-driver, duplicate finger-operating levers mounted on the lever which reciprocates the shuttle-driver, and connected at their ends with the fingers of the shuttle-driver, and a stationary cam, with which the finger-operating levers engage to produce the necessary rising and falling action of the fingers relatively with the shuttle. By this combination of devices a shuttle-driving mechanism is obtained which is not only simple, compact, and effective, but admits of a high rate of speed being given to the shuttle.

Figure 1 of the drawings represents a vertical section transversely to the raceway of a narrow-ware loom in part having my invention applied; Fig. 2, a vertical section of the same on the line *x x* in Fig. 1; Fig. 3, an inverted plan of like parts, and Fig. 4 a longitudinal elevation of the shuttle-driver detached.

In said drawings, A indicates the table and frame portion of the loom, having a curved raceway, B, open both above and below, for the shuttle C to work in, and divided at its center, leaving a space, *a b*, of sufficient width to admit of the passage and shedding of the warp.

D is a horizontal rotating shaft, arranged beneath the table A and at a suitable distance in rear of the raceway B. This shaft may be extended to operate several looms, and is provided with a grooved cam, E—that is, one for each loom—for operating the shuttle-driving mechanism. It may also be fitted with gear for actuating the other working parts of the loom. The cam E is arranged opposite and in rear of the shuttle-driver F, which has a curvilinearly-reciprocating motion by means of a simple lever, G, directly connected with said driver, and having its center of motion, *d*, concentric with the raceway B. The vibrating motion of this lever G to actuate the shuttle-driver is effected by a stud or roller, *e*, on it, arranged to gear with the grooved cam E. This forms a very simple and direct means within the narrow frame of the loom for operating the shuttle-driver. The fingers *f f*, by which the shuttle-driver F is made to propel the shuttle C, are arranged one near either end of said driver, and are fitted to have a sliding motion up and down through guides *g g* in the driver, to provide for them being alternately drawn downward out of the shuttle below the warp during the travel of the portion of the shuttle with which they engage through the warp, and of their subsequent engagement again with the shuttle. This usual and necessary action of the fingers *f f* is produced as follows: Mounted upon the lever G, and having their fulcrum at *h h*, are two independent levers, H H, which are connected at their front or free ends with the fingers *f f* in any suitable way, to provide for elevating and depressing the latter. These levers H H, which should be constructed or fitted to accommodate their curvilinear action to the motion of the fingers, are alternately raised or lowered, accordingly as it is necessary to put the fingers in or out of connection with the shuttle, by means of a stationary slotted cam, I, with which studs or

rollers *k k* on said levers engage, and along which they travel as the lever G is vibrated from its center of motion *d*, the slot *s* in said cam being suitably constructed to provide for the proper action of the fingers relatively to the shuttle.

A much higher velocity may be obtained for the shuttle by this combination of driving devices than is practicable under many other combinations for the same purpose, and great compactness with the most perfect freedom of action generally is secured.

What we claim as our invention, and desire to secure by Letters Patent, is—

The combination, with the curved raceway B and a shuttle-driver, F, working therein, and provided with vertically-movable fingers *f*, of the horizontal lever G, the cam E, for operating said lever, the levers H, secured at one end to the lever G and connected at their other ends with the fingers *f*, so as to move horizontally with the lever G and shuttle-driver F, and the stationary cam I, whereby a rising-and-falling motion is imparted to the levers H and fingers *f*, substantially as herein specified.

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