

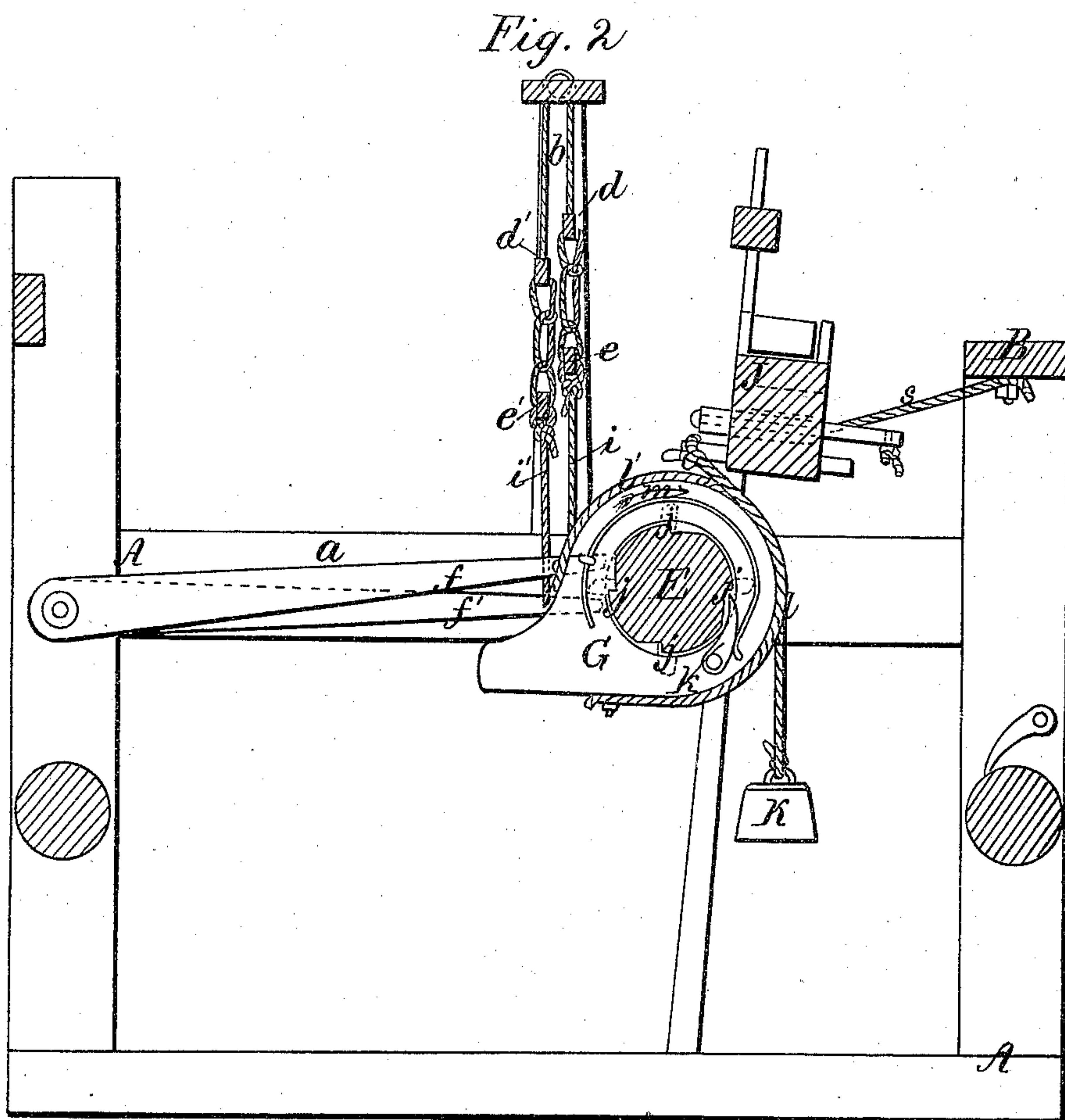
Sheet 2-3 Sheets.

I. H. Garretson.

Hand Loom.

N^o 7,936.

Patented Feb. 18, 1851.



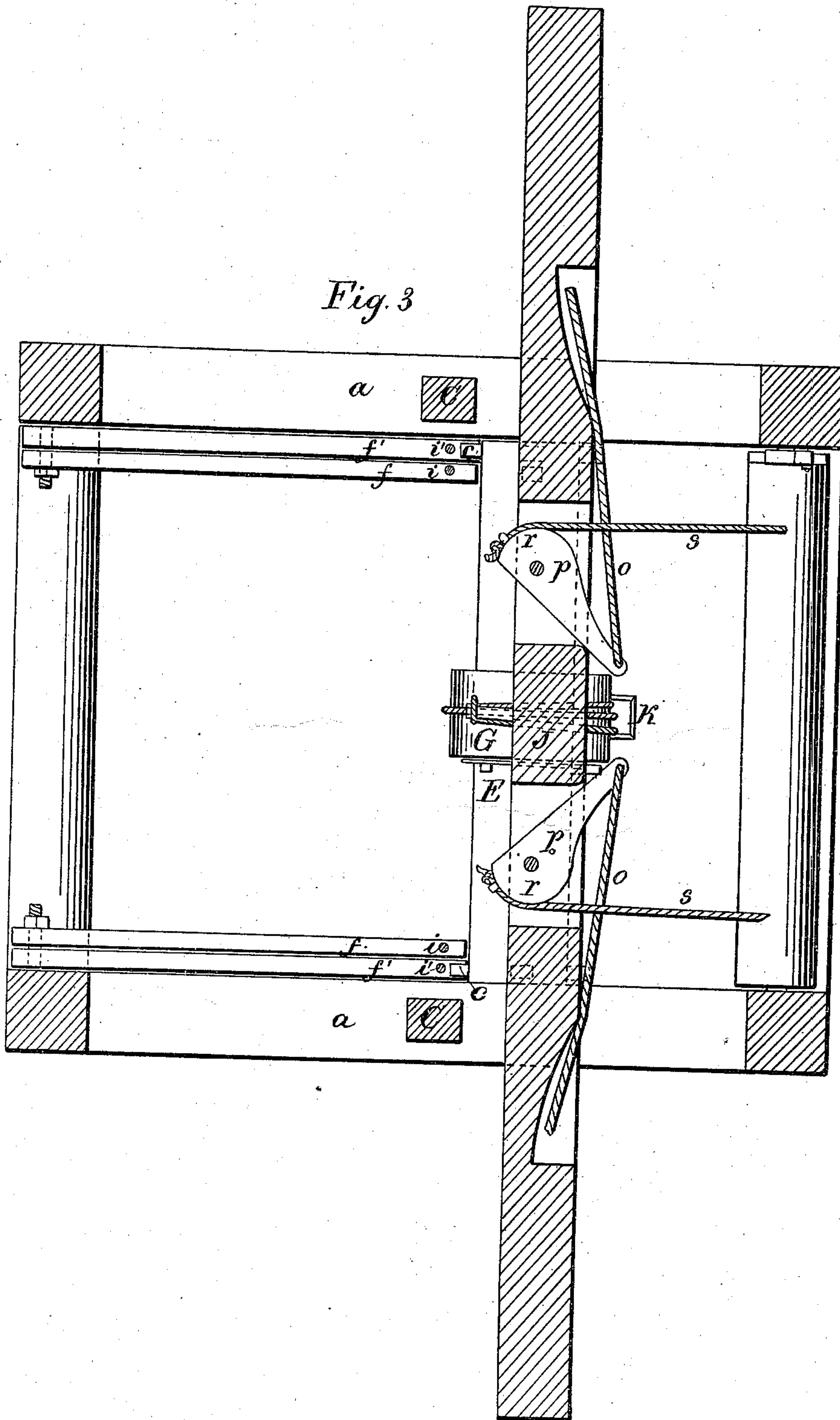
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Fig. 3



UNITED STATES PATENT OFFICE.

ISAAC H. GARRETSON, OF CLAY, IOWA.

HAND-LOOM.

Specification of Letters Patent No. 7,936, dated February 18, 1851.

To all whom it may concern:

Be it known that I, ISAAC H. GARRETSON, of Clay, in the county of Washington and State of Iowa, have invented certain new and useful Improvements in Looms, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing, which forms part of this specification, and in which—

Figure 1 is a view in perspective of a loom frame with those portions of the loom to which my improvements are applied; Fig. 2 is a vertical transverse section of the same, and Fig. 3 is a plan with certain portions removed to show more clearly the construction and operation of the loom.

My invention consists first in effecting the movement of the headles by a motion derived from the lay through the intervention of a cam shaft and treadles or their equivalents, the first of which is made to revolve by means of a ratchet which is put in motion by the lay and acts upon ratchet teeth secured to the cam shaft; and second, in effecting the throwing of the shuttle by a motion derived from the lay, by means of a pair of levers whose arms are connected with the breast beam and shuttle drivers.

In the accompanying drawings A A is the frame of the loom and B is the breast beam. Two standards C C are erected upon the side rails *a a* of the loom frame and are connected at their upper extremities by the treadle bearer D; the latter is perforated to admit a pair of sheaves over which the cords *b* are passed from which the upper headle shafts *d d'* are suspended. The lower headle shafts *e e'* of each set is connected by cords *i i'* with a pair of levers or marches *f f'* which are pivoted at their hinder extremities to the opposite sides of the loom frame. The front extremities of the marches are operated by cams *c* which are projected in alternate pairs corresponding with the pairs of marches from the barrel of a transverse cam or tappet shaft E whose gudgeons are supported in brasses affixed to the side rails of the loom frame. This cam shaft is furnished with a series of ratchet teeth *j* corresponding in number with the cams at each end of the shaft. A ring block G is constructed to turn upon the cam shaft, this block has a strap secured to it which extends forward over the block, hangs down at its front and has a weight K secured to its depending extremity, sufficiently heavy to turn the block

upon the cam shaft in the direction indicated by the arrow *m* in the drawing; the block is fitted with a spring ratchet *k* which engages with the ratchet teeth on the cam shaft and is connected by means of a strap or cord *l* with the back of the lay; the arrangement of the several parts of this device being such that as the lay is drawn toward the breast beam B the weight K acting through the cord *l'* turns the block in the direction indicated by the arrow *m* in Fig. 2, and the ratchet *k* leaving the tooth with which it is in contact slips over the barrel of the shaft E and engages with the next succeeding ratchet tooth; while as the lay is moved back from the breast beam the cord *l* turns the ring-block in a direction the reverse of that indicated by the arrow *m* and the ratchet engaging with the ratchet tooth on the cam shaft, turns the latter and depresses one pair of cams upon the front ends of their corresponding pair of marches, *f*. The latter by means of the cords *i* draw the one set of headles downward while the other set being acted upon by the cords *h* are drawn upward, thus forming the shed, while at the same time the pair of marches *f'* connected with the ascending set of headles are also drawn upward to be acted upon in turn by the next succeeding pair of cams as they are depressed by the turning of the cam shaft, effected by a succeeding stroke of the lay. As the cord *l* turns the ring block in a direction the reverse of that indicated by the arrow *m* the cord *l'* with its weight K is wound up to be ready to act as the lay is again moved forward.

The second part of my invention has reference to the movement of the shuttle.

In the accompanying drawing H I are the shuttle boxes which are arranged in any convenient manner at the opposite extremities of the lay J. Each shuttle box is fitted with a driver *n* which is connected by a cord *o* passing through a slot in the bottom of the shuttle box, with the projecting arm of a lever or picker stick *p* which is pivoted to the lay beneath the race. The other arm *r* of the lever *p* is curved and is connected by a cord *s* with the breast beam. The lengths of the breast beam cords *s* are such that when the lay is at its hindermost position and the levers are in the positions in which they are represented at Fig. 3, these cords are drawn tight. The lengths of the shuttle driver cords *o* are such that when

the levers *p* are in the positions in which they are represented at Fig. 3, the drivers are at their innermost positions in their respective shuttle boxes. The operation of this shuttle motion is as follows: The lay is drawn forward, that is toward the breast beam, the drivers *n* are drawn to their outermost positions in their respective shuttle boxes and the shuttle is then inserted in its proper box. As then the lay is shoved backwards, the breast beam cords, tightening cause the levers *p* to turn on their pivots and by means of the driver cords to draw the drivers to their innermost positions, thus causing the shuttle to travel from the shuttle box in which it was inserted toward the box at the opposite extremity of the race. As the lay is redrawn forward as soon as it reaches its hindermost position, the tightened breast beam cords are immediately slacked and the shuttle, entering the box, toward which it was driven strikes the driver therein and forces it to its outermost position; the driver in moving turns back the lever *p* with which it is connected, to the position which it occupied before the lay was thrust back, and thus places it in the proper position for being operated by the breast-beam-cords at the next succeeding backward stroke of the lay.

From the foregoing description it is evident that the principal operations in the loom, that is the throwing of the shuttle,

and the formation of the shed by the movement of the headles, are effected by the movement of the lay to which in hand looms the hands of the operator are applied. By these improvements the working of hand looms is greatly simplified as the treading is superseded by this lay-treadle-motion, and the hand-shuttle throwing is replaced by this lay-shuttle-motion. At the same time the simplicity of the whole is such that these improvements can be applied by very ordinary mechanics to hand looms of the usual construction.

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

1. The device, consisting substantially of the tappet shaft with its ring block and ratchet together with the connecting cord weight and marches, whereby the headles are raised and depressed in the proper order to form the shed by the movement of the lay substantially as herein set forth.

2. A likewise claim the device, consisting substantially of the levers with the breast-beams cords and picker-stick cords, whereby the picker sticks are moved to drive the shuttle by the movement of the lay.

In testimony whereof I have hereunto subscribed my name.

ISAAC H. GARRETSON.

Witnesses:

FERTUS REED,
ALEXANDER SMITH.