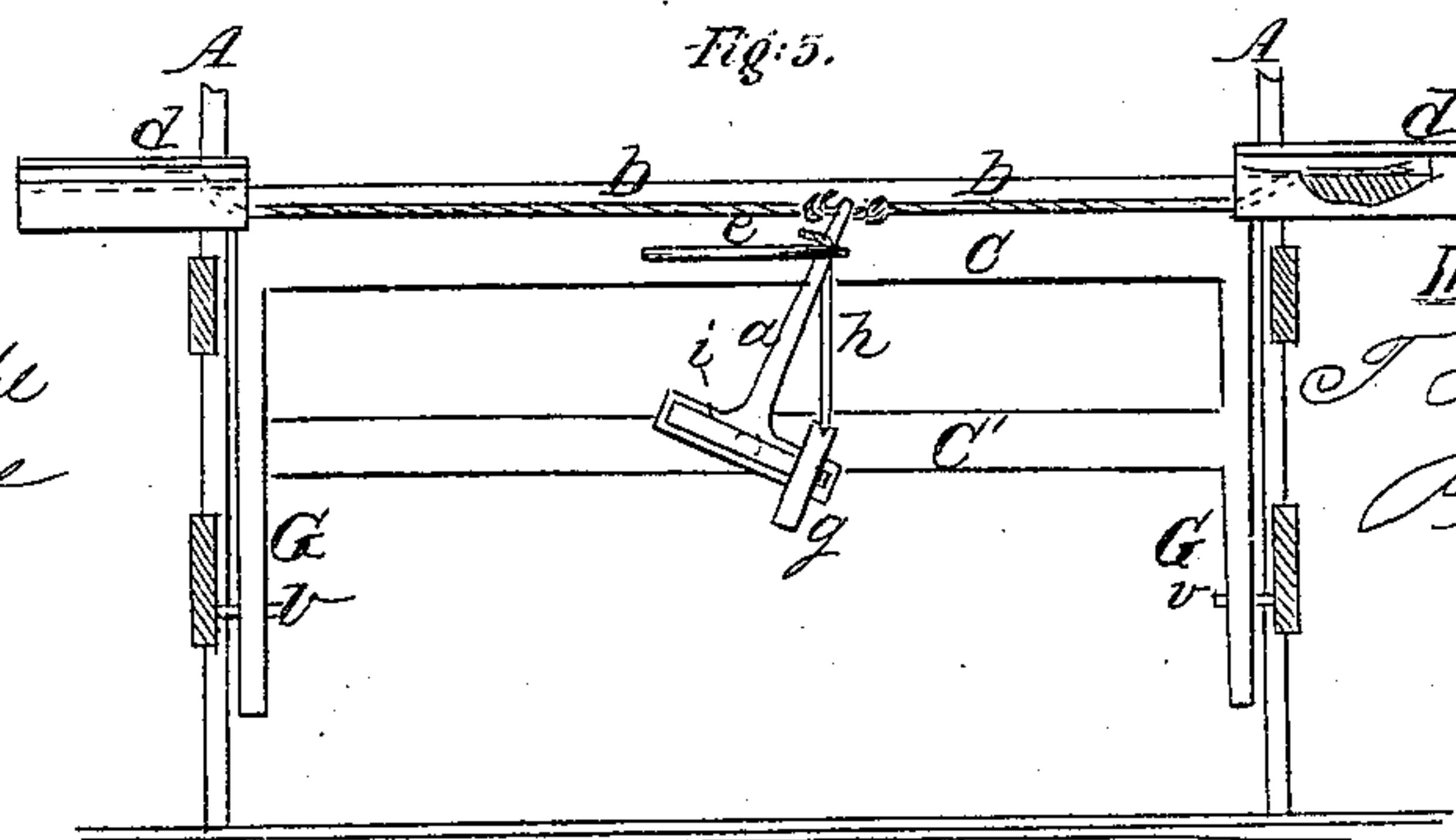
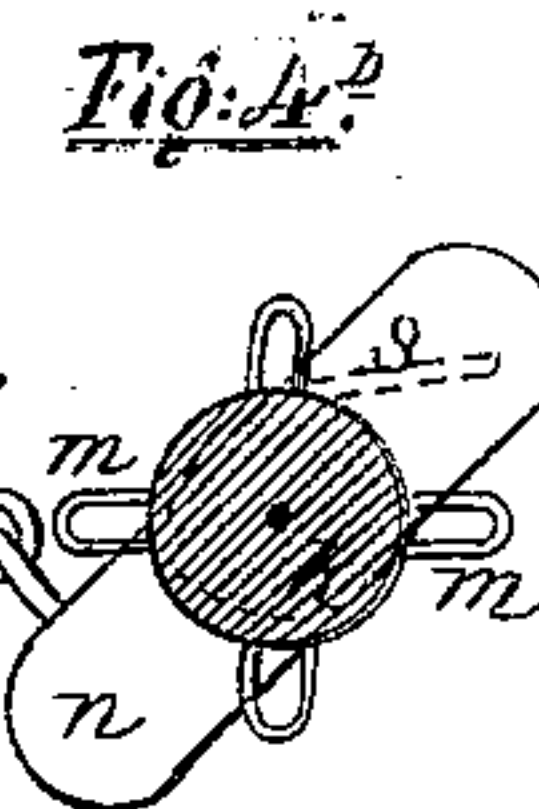


*Patented Nov. 19, 1867.*



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# United States Patent Office.

T. HENRY TIBBLES, OF KANSAS CITY, MISSOURI, ASSIGNOR TO HIMSELF  
AND F. L. McHENRY, OF THE SAME PLACE.

*Letters Patent No. 71,087, dated November 19, 1867.*

## IMPROVEMENT IN HAND-LOOMS.

*The Schedule referred to in these Letters Patent and making part of the same.*

### TO ALL WHOM IT MAY CONCERN:

Be it known that I, T. HENRY TIBBLES, of Kansas City, in the county of Jackson, and State of Missouri, have invented a new and useful Improvement in Hand-Looms; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a longitudinal vertical section of my improved loom, taken in the line *x x*, fig. 2.

Figure 2, a top view.

Figure 3, a vertical cross-section in the line *y y*, fig. 1, showing my improved device for moving the drivers to throw the shuttle.

Figures 4<sup>a</sup>, 4<sup>b</sup>, detached views of the cam-rollers.

Similar letters of reference indicate like parts.

This invention relates to improvements in an ordinary hand-loom, and consists in a new device for operating the drivers and throwing the shuttle by the motion of the lay, with one upright picker-staff and a shifting weight, and working the heddles by direct action of the lay, without treadles, through the medium of cam-rollers, and also so constructing the lay that it may be removed without taking down the loom, as hereinafter particularly described. Only such parts of the loom are represented in the drawings, and herein described, as are essential to my improvements.

A represents the framing of a common loom, in which B are the heddles, C the lay, D the breast-beam, and E the yarn-roll or beam; all of which parts are constructed and arranged in the ordinary way. On the front side of the cross-bar C' of the lay C, an upright picker-staff or rod, *a*, is pivoted at its lower end, and to the upper end of the staff are fastened cords or straps *b b*, that pass right and left, and are connected with the shuttle-drivers *d*, on each side of the loom. The upper end of the staff *a* moves in a guide, *e*, and on the lower end is attached a shifting or sliding weight, *g*, connected by a cord or strap, *h*, with the breast-beam D. The tendency of the weight is always to rest in that end of the slide-bar *i* that is the lowest, and when the lay is pushed forward from the breast-beam, the strap *h*, acting on the weight resting in the lower end of the bar, draws up that end of the slide-bar *i*, causing the upper end of the staff to move sidewise, and draw one of the straps *b*, and thus act on one of the drivers *d* to throw the shuttle in one direction, and while the lay is being pulled backward towards the breast-beam, the strap *h* is relaxed, and the weight *g* slides down the bar *i* to the opposite end, which is the lowest, and holds the picker in position to be again operated by the lay when it is next moved forward, and thus move the other block and shuttle. This device is simple and effective for throwing the shuttle with every movement of the lay backwards and forwards.

My second improvement is an arrangement for working the heddles B by the direct action of the lay with cam-rollers, thus dispensing with treadles for springing the web or shedding the warp. For this purpose rollers K K' are hung under the bottom of the heddles B, transversely, upon a cross-frame, F, on which rollers are placed cams *m m*, one or more under each heddle at each end, for lifting the heddles successively to shed the warp, instead of treadles in the usual way. To turn the rollers *k k*, the levers *n n* are loosely fitted on their axes at one end, which carry pawls *s s* working in ratchet-teeth on their ends, and the levers *n n* are worked by means of a horizontal bent lever, *q*, pivoted on the stud *w* to the cross-frame F, with which the levers are connected by rods *r r*, as shown in the drawings. One of the rods, *r*, is fastened to the upper end of the lever *n*, and the other rod to the lower end of the opposite lever. The bent lever *q* is also connected at one end by the rod *r'*, with the back of the lay in such manner that the motion of the lay shall vibrate the bent lever to and fro, and thus act on the levers *n n*, one of the rods *r* pushing and the other pulling the levers, and thus turning the cam-rollers and lifting both ends of the heddles simultaneously as desired, according to the position of the cams.

A third improved device of my invention is making slots, *u u*, in the lower end of the swords G G, in which pins *v v*, on the frame of the loom, are inserted to support them, upon which pins the lay can rock instead of on



a shaft or rock-bar, the object of which arrangement is to allow the lay to be taken readily out of the loom without taking it down.

Having described my improvements in hand-loom, what I claim as new, and desire to secure by Letters Patent, is—

1. The single upright picker-staff *a*, the sliding weight *g*, and the straps *b* and *h*, in combination with the lay *C*, the breast-beam *D*, and the drivers *d d*, constructed, arranged, and operating substantially as and for the purpose described.
2. The cam-rollers *k k*, operated by the bent lever *q*, as described, in combination with the heddles *B* and the lay *C*, operating as and for the purpose herein specified.

Witnesses:

E. H. WEBSTER,  
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T. HENRY TIBBLES.