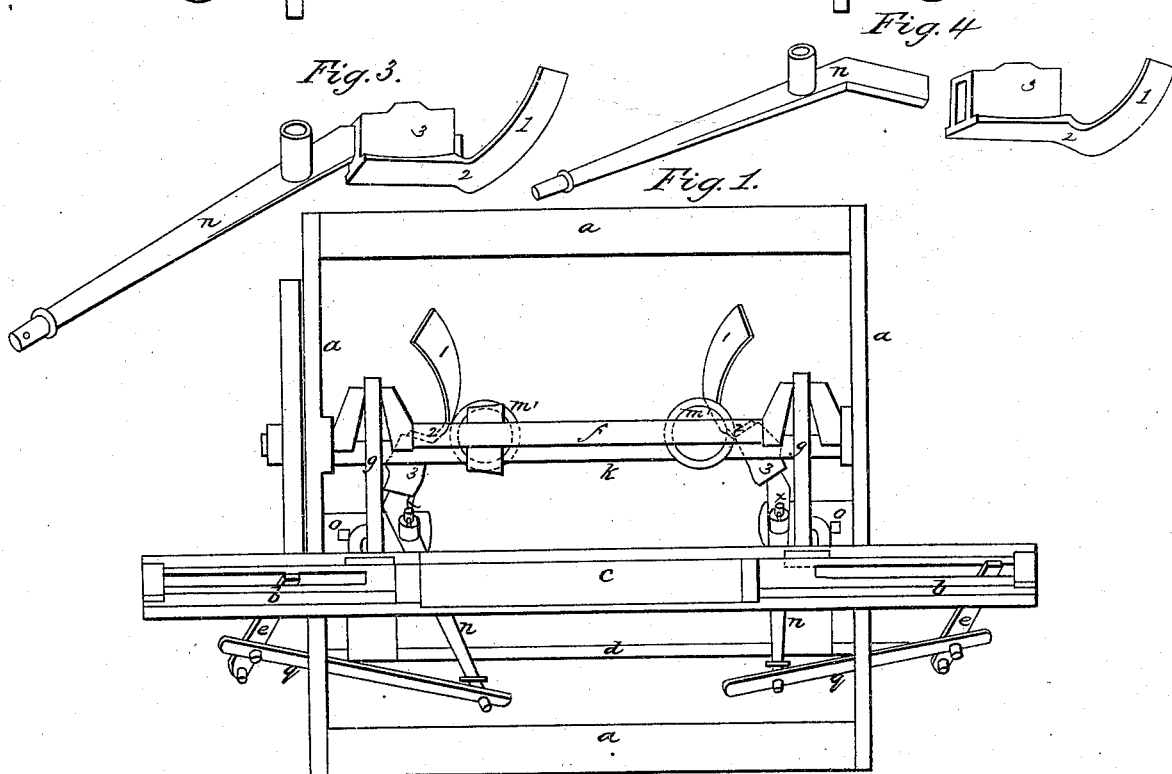
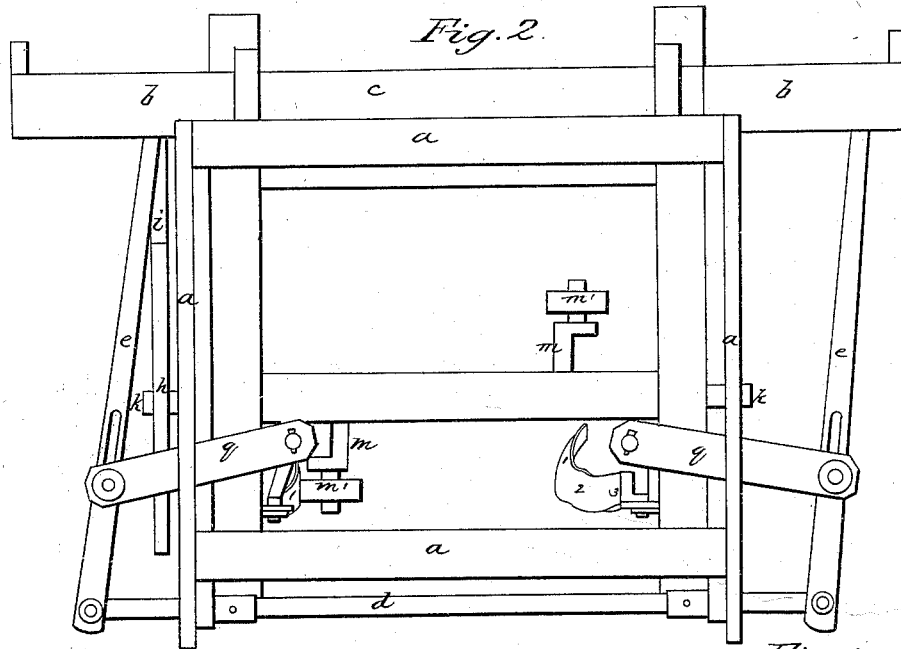


O. A. Kelly.
Shuttle Motion.

N^o 7,417.

Patented Jun. 4, 1850.



UNITED STATES PATENT OFFICE.

OLIVER A. KELLY, OF WOONSOCKET, RHODE ISLAND.

SHUTTLE-MOTION OF LOOMS.

Specification of Letters Patent No. 7,417, dated June 4, 1850.

To all whom it may concern:

Be it known that I, OLIVER A. KELLY, of Woonsocket, in the county of Providence and State of Rhode Island, have invented a new and improved construction and arrangement of what is commonly called the "Bat-wing shuttle-motion" for power-looms, as used by Sharp and Roberts, of Manchester, England; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings of the same, making part of this specification, in which—

Figure 1 is a top view, and Fig. 2 a front elevation of a skeleton of a loom with my improvements applied thereto, and Figs. 3 and 4 are views in perspective of the lever which communicates motion from the wiper to the picker stick.

The "bat-wing shuttle motion" as constructed by Sharp and Roberts is not adapted to power looms working at the high velocity with which looms for weaving cotton are driven at the present time, although it was very well calculated for the comparatively slow motion with which looms were driven a few years ago. As this motion was considered to be in many respects superior to all others, it has for some time been a subject of regret that it is not applicable to the high velocity at which looms must now be driven in order to manufacture cloth at a marketable price. To supply this desideratum, by adapting this motion to high velocities, is the object of my present invention, which I will proceed to describe, premising that such parts only of the loom as are directly connected with or essential to the illustration of my improvements will be referred to in this specification.

In the accompanying drawings *a* is the frame of the loom made in the usual manner, *b b* the shuttle boxes mounted upon the lay *c*, which is supported on a rock shaft *d*. *e e* are the picker sticks, *f* the crank shaft which by means of the connecting rods *g g* communicates the usual vibratory motion to the lay.

h i are cog wheels gearing into each other. The former is mounted upon the cam or main driving shaft *h*, the latter upon the crank shaft *f*, the wheel *i* being half the diameter of *h*, so that the latter turns once while the former turns twice, which produces the proper relative motion of the parts. Upon the cam shaft *h* two driving

arms *m m* are placed equidistant from its center, and radiating in opposite directions. On the ends of each of these arms a friction wheel *m'* is placed, and held in its position by suitable collets, pins &c.

n n are horizontal levers mounted upon vertical pivots *x x* which are secured to slotted brackets *o o* fastened to the inner sides of the frame, the slots in the brackets admitting of the adjustment of the pivots, to bring the levers *n n* nearer to or farther from the driving arms, the rear ends of the adjustable levers *n* are formed with a double curve, called the "bat-wing" from a fancied resemblance to the wing of a bat, the convex side of the curved part 1 and the concave side of the curved part 2 being next to the driving arms; the concave part (2) is for the friction rollers or wipers *m'* on the ends of the driving arms to strike against, to give the sudden motion to the lever which throws the shuttle, the convex portion is to prevent too sudden a reaction of the lever when drawn back by the spring, by easing it off gradually against the roller as the latter passes up. By this means also the picker stick is held at the inner end of the shuttle box a sufficient length of time to prevent the accidental insertion of a shuttle in each shuttle box at the same time. The curved extremities of the levers are provided with sockets 3 to receive the hinder end of the part *n* and also to allow of their adjustment thereon to increase or diminish the distance of the curved extremities from the pivots on which the levers turn, and to set them so that the driving arms will strike them at the proper time to throw the shuttle through the shed at that point in the arc of vibration of the lay, which experience may demonstrate to be best in each particular case. The front ends of the levers *n* are connected with the picker sticks by straps *q q*.

To produce the requisite motions of the picker sticks by the device just described the cam shaft and its driving arms are turned so as to ascend on the back and descend on the front side of the loom, during the down stroke of each arm it strikes the concave part 2 of the lever which projects obliquely into the plane of its motion, deflecting it suddenly outward and its opposite or front end inward, the latter end through the medium of the connecting strap (*q*) pulling the picker sticks inward with corresponding suddenness to throw the shuttle,

On comparing this shuttle motion with that of Sharp and Roberts it will be perceived that it differs from it in the following particulars; first the picker stick vibrates
5 with the lay and is consequently always at the same distance from the driver, while in the shuttle motion of Sharp and Roberts the picker stick does not vibrate and the distance between it and the driver is constantly varying. Second—in the motion of
10 Sharp and Roberts the bat wing lever turns upon a long horizontal shaft supported in two pillow blocks which do not possess the advantage of being easily and quickly
15 moved in their position to adjust the bat wing; while in my motion the bat wing lever turns upon a single upright pivot, which is in such a position that it can be easily got at, and can be easily moved by slackening
20 and tightening a single nut, to adjust the throw of the shuttle to the quality of the filling or the greater or less ease with which the guard motion is operated. This facility of adjustment is of considerable importance
25 as its frequent performance is rendered necessary by a variety of causes.

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

Attaching the bat "wing" by an adjustable
30 connection to one extremity of a lever whose other extremity is connected by a short strap with the pitcher-stick, the lever turning on a single adjustable vertical pivot and being
35 interposed between the wiper operating as described and the picker stick, motion from the wiper being transmitted through this lever strap and picker-stick to the driver so as
40 to cause it to throw the shuttle with the proper degree of suddenness and velocity when the loom is working at a high speed; this arrangement admitting of the easy and quick graduation of the suddenness and velocity with which the shuttle is thrown as
herein set forth.

In testimony whereof I have hereunto subscribed my name.

OLIVER A. KELLY.

Witnesses:

WILLIAM J. HOHER,
HORACE COOK.