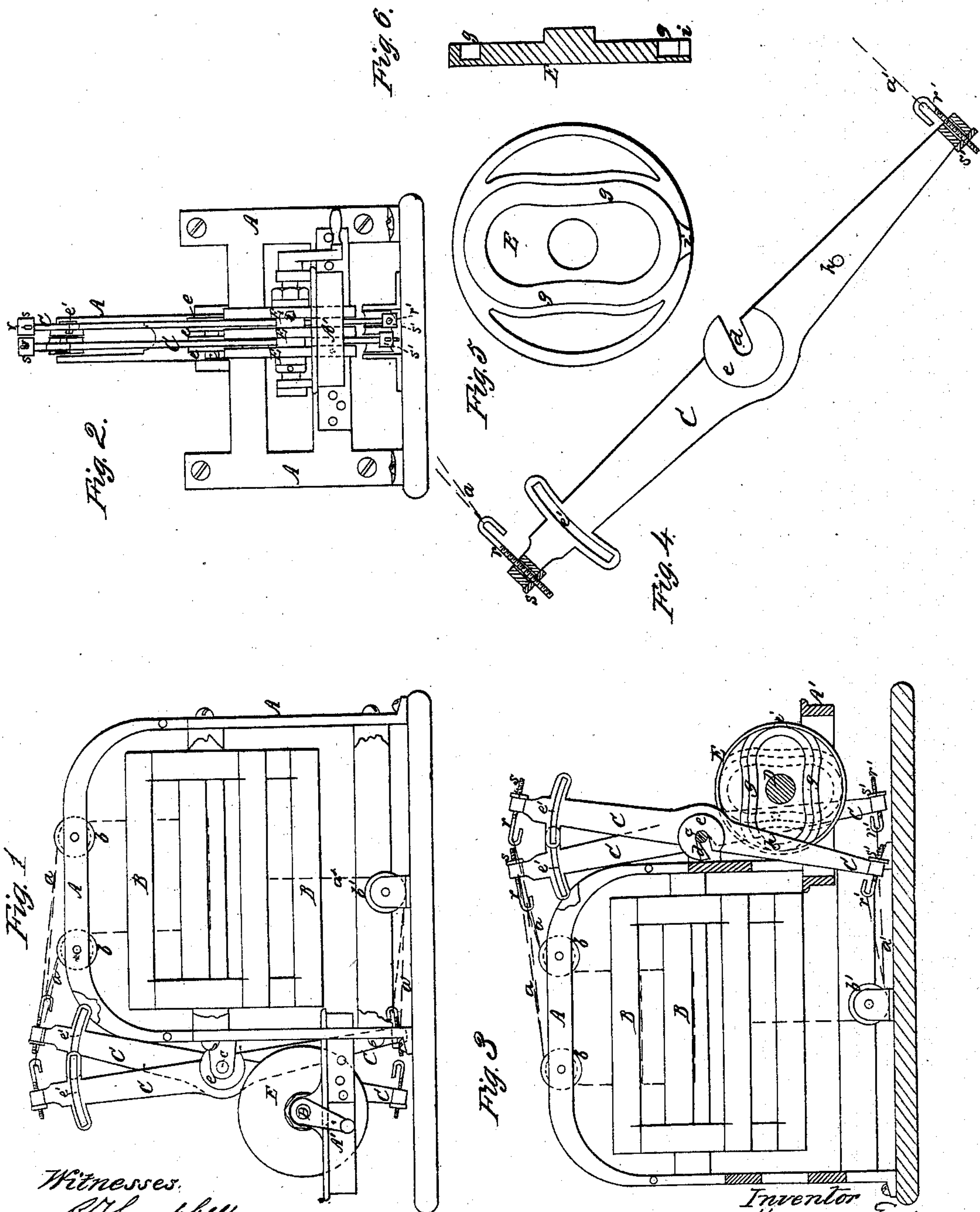


H. A. Ellis.
Shedding.

N^o 59,987.

Patented Nov. 27, 1866.



Witnesses:
R. Campbell.
Edw Schafer.

Inventor
Henry A. Ellis
by atty.
Nathan. Hannick & Lawrence

United States Patent Office.

IMPROVEMENT IN LOOMS.

HENRY A. ELLIS, OF MYSTIC RIVER, CONNECTICUT, ASSIGNOR TO HIMSELF AND PEQUOT MACHINE COMPANY, OF SAME PLACE.

Letters Patent No. 59,987, dated November 27, 1866.

SPECIFICATION.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, HENRY A. ELLIS, of Mystic River, New London county, State of Connecticut, have invented certain new and useful Improvements in Looms; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a front elevation of the frame of a loom, having my improvements applied to it.

Figure 2 is an elevation of one side of the loom.

Figure 3 is a transverse section taken through the loom at the point indicated by line *x x*, in fig. 2.

Figure 4 is an enlarged view of the harness levers and its adjusting hooks.

Figures 5 and 6 show the construction of the shell cams for operating the levers.

Similar letters of reference indicate corresponding parts in the several figures.

My invention consists in a combination of the slots in the levers with slots in the outer rims of the cams, in such manner that either one of the levers may be detached from the cam without detaching such lever from its bearing, and also in such manner that any one of the levers can be detached both from the cam and from its bearing without disturbing the other levers. My invention consists further in the construction of each of the levers with a hook-slot at the point where it vibrates, with a cam-traversing pin projecting directly from its face, and with screw hooks for holding and adjusting the heddles.

To enable others skilled in the art to understand my invention, I will describe its construction and operation.

In the accompanying drawings, A represents the frame of the loom, which may be constructed in the usual manner; B B are two heddles, by which the threads of the warp are alternately raised or depressed; and *a a'* are the cords by which these heddles are attached to the ends of vibrating levers C C, which cords pass around pulleys *b b'*, as shown in figs. 1 and 3. I have represented but two heddles in the drawings, but in practice a number of them will be used, according to the figure which it is desired to weave. The levers C C are arranged to vibrate in vertical planes, and are hung to a rod *c*, which has its end bearings in brackets projecting from the end of the loom frame. These levers are constructed with slots *d*, which incline downward and form hooked receptacles for the rod *c*, for the purpose of allowing of the attachment and detachment of any one of the levers from said rod, without removing this rod from its bearings or disturbing other levers. The slots *d* are made slightly oblique to the length of the levers for the purpose of preventing the latter from slipping off their rod *c*. The levers C are constructed with hubs *e*, and also with segments *e'*, for the purpose of spacing them upon their pivotal rod *c*, and preventing lateral looseness when they are vibrated. Below the pivotal support of the vibrating levers C is a secondary frame A', which is secured to one end of the main frame A, and adapted to form a support for a horizontal shaft D, which receives a rotary motion from the main shaft of the loom. Upon this shaft D are keyed in a suitable manner the shell cams E E, for vibrating the levers C C, the lower arms of which work between these cams, as shown in the drawings. The cams are all constructed with a groove *g*, of an elliptical form in their faces, and are adjusted upon their shaft D, so that the longest diameter of one cam slot shall be at right angles to the corresponding diameter of the cam slot of the next cam, for the purpose of giving an equal length of vibration to both levers C C. The connection of the levers with the cams is made by means of pins *h*, projecting from the sides of the levers and entering the elliptical slots. At suitable points on the faces of the cams E E, and at the circumference thereof, grooves or notches, *i*, are made of sufficient width to admit the pins *h* to pass through them in entering or leaving the slots *g*. The object of making these grooves, *i*, in the cams, is to allow of the insertion and removal of the pins *h* without detaching the cams E from their shaft, and without detaching the levers C from their rod *c*. This notch, *i*, in each cam, obviates the necessity of loosening the several cams on shaft D when it is desired to remove one of the levers C, or to throw it out of action; also to admit of the removal of the cam-plates, without detaching the levers from their rod *c*. The harness cords *a a'* are attached to hooks which are formed on short screw-rods *r r'*, that pass loosely through eyes which are formed on the extremities of the levers C, and receive upon their ends nuts *s s'* by which the harness can be adjusted and levelled without detaching the cords from said hooks.

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

I do not claim a lever with a branch arm which carries a traversing pin; nor do I claim a lever *per se*,

which has a pin projecting directly from its face, and working in a cam; nor do I claim, broadly, providing for the separate removal of the jacks; nor do I claim, broadly, working a pin in a cam, which is partly left open; nor do I claim, broadly, a screw-adjusting device for a heddle or heddles; but what I do claim as my invention, and desire to secure by Letters Patent, is—

1. The construction of the lever C, with a slot *d*, pin *h*, and screw hooks *r r*, substantially as and for the purposes set forth.

2. The combination of the slots *d* in levers C with the slots *i* in the outer rims of the cams E, substantially as described.

HENRY A. ELLIS.

Witnesses:

G. H. BUCKLEY,
LEMUEL CLIFT.