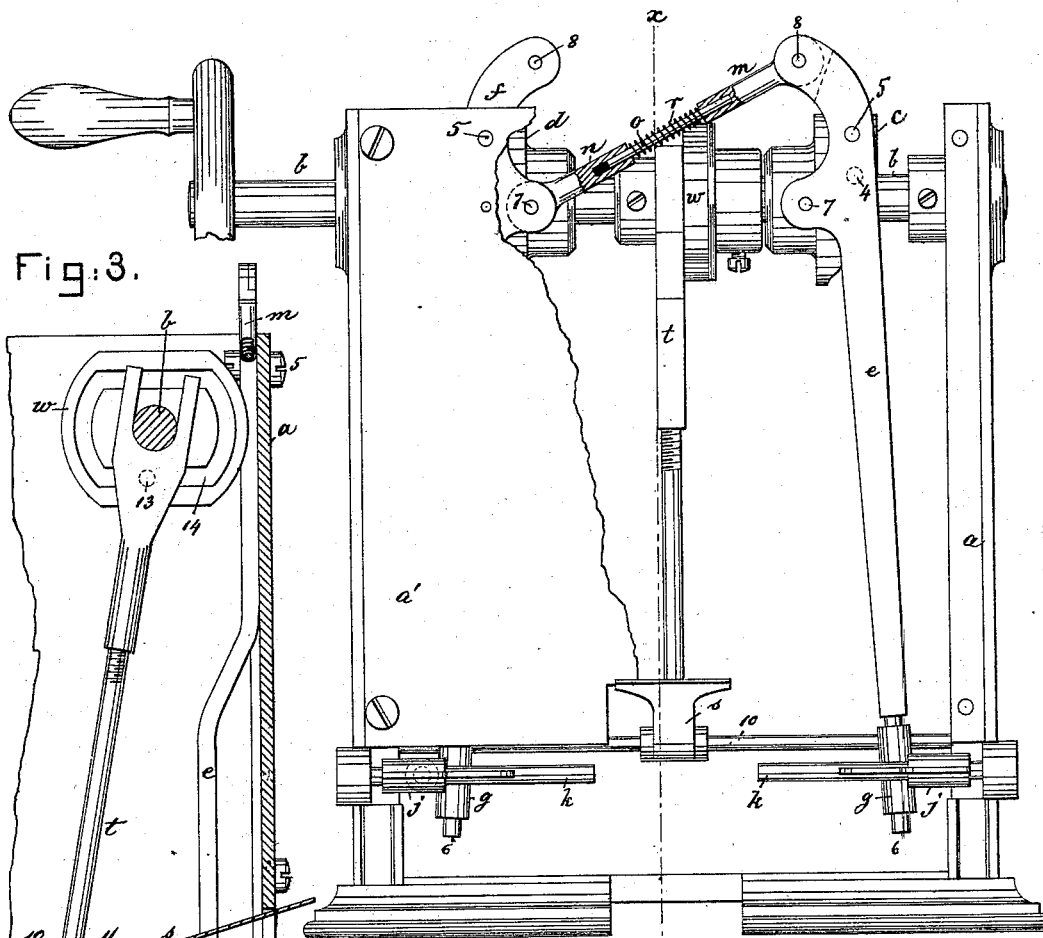


**Patented July 15, 1879.**

Fig:1.



xFig:2:

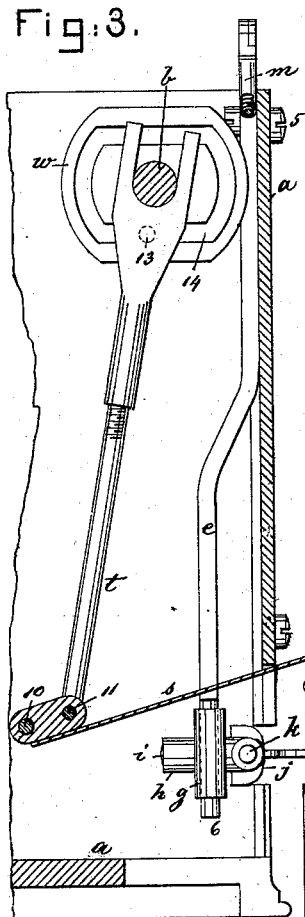
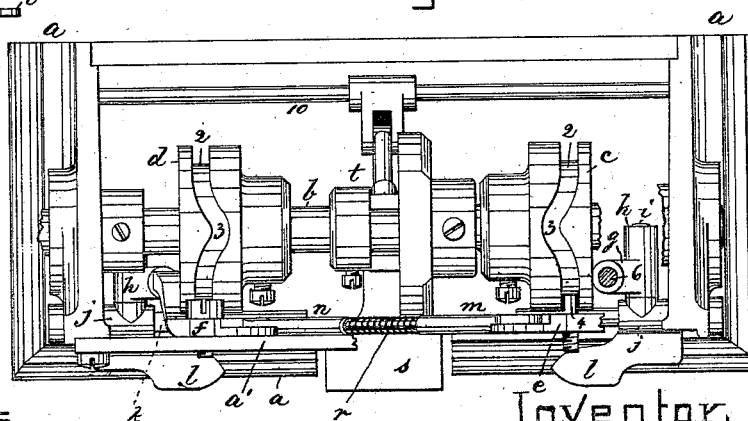
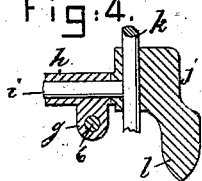


Fig:4.



Witnesses.  
 W. E. Whitney.  
 J. T. Krumm.

Inventor,  
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by Crosby Gregory *Attys*

# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN SHUTTLE-ACTUATING MECHANISMS FOR LOOMS.

Specification forming part of Letters Patent No. **217,524**, dated July 15, 1879; application filed  
April 14, 1879.

*To all whom it may concern:*

Be it known that I, CHARLES FOSDICK, of Fitchburg, county of Worcester, State of Massachusetts, have invented an Improvement in Shuttle-Actuating Mechanisms for Looms, of which the following description, in connection with the accompanying drawings, is a specification.

This invention relates to looms; and consists, essentially, in means, substantially as hereinafter described, for operating the shuttle positively.

This invention is an improvement on that class of loom wherein the shuttle is alternately automatically taken from and presented to arms located at opposite sides of the selvage-warps, the said arms being reciprocated backward and forward between the selvage-warps and a central portion of the warps, suitable catches or other devices on the shuttle-carriers co-operating with the shuttle and devices forming part of it, so as to alternately engage one carrier with and disengage the other from the shuttle, as is necessary.

One form of loom-shuttle and actuating devices such as hereinbefore referred to, is shown in United States Letters Patent No. 196,795, November 9, 1877, to which reference may be had; but it is to be understood that, instead of the particular shuttle and engaging and disengaging devices, pins, slide, &c., I may employ any other well-known devices having a like principle of operation.

The features of invention herein claimed refer to devices for imparting reciprocatory motion to any of the usual parts which engage and release the shuttle at a point within the shed, and take it from said point, the one from the other, alternately, in opposite directions.

Figure 1 represents in top view a portion of a loom sufficient to illustrate and explain this invention to one skilled in the art of weaving, a portion of the plate being broken away, it being understood that the portions at the left of this figure which are not shown are just as those parts shown at the right-hand side of the said figure; Fig. 2, an inverted end view of Fig. 1; Fig. 3, a section on the line *xx*; Fig. 4, a detail.

The frame of the loom, herein supposed to be represented by *a*, may and will be of any

usual and proper construction to receive the working parts.

The rotating shaft *b*, mounted on the said frame, has upon it two cam-grooved hubs, *c d*, each having a cam-groove, 2, with two throw-ports, 3.

These cam-grooves receive within them pins 4, one only of which is shown, that project from vibrating shuttle-levers *e f*, having their fulera at 5. The forward end of each of these shuttle-levers is rounded, as at 6, to enter a tubular branch, *g*, of a compound sleeve, the other tubular branch, *h*, of the said compound sleeve at right angles thereto, being adapted to receive within it the foot *i* of the shuttle-carrier *j*, fitted upon and so as to be capable of being slid or reciprocated longitudinally along and over a guiding-rod, *k*, fixed with relation to the loom-frame.

The shuttle-carrier *j* has projecting from it an arm, *l*, which it is understood will be provided with shuttle-engaging devices such as described in the patent hereinbefore referred to, or other known equivalents.

The shuttle-levers *e f* each have two holes, 7 8, at opposite sides their fulera to receive suitable pins by which to enable the connection with the said arms of a yielding link composed, as herein shown, of two socketed portions, *m n*, a rod, *o*, placed within the socketed portions, so as to move therein in the direction of its length, and a spring, *r*, about the rod, with its ends against the ends of the socketed portions *m n*, one end of the said spring and one end of the said rod being preferably attached to one of the socketed portions—as shown, to portion *m*. The ends of the yielding link are connected with the shuttle-carrying arms *e f*, at substantially the same distances from their fulera, as shown in Fig. 1. This yielding link, so connected with the arms *e f* at opposite sides of the fulera, acts to keep the pins 4 of the said arms, which extend into the cam-grooves 2, pressed against the like or corresponding sides or walls of the cam-grooves.

This is important, in that it insures that the shuttle-levers always operate the full stroke of the cam, and the shuttle-carrier therefore always terminates its movements in the same place to thereby be ready to receive and de-

liver the usual shuttle to be operated positively by the arms of the said carrier.

By changing the yielding link from the position Fig. 1 to the unoccupied holes 7 8 of the levers *e f*, the pins 4 will be pressed hardest against the opposite side walls of the cam-grooves in which they run.

The reduced end 6 of the shuttle-lever and the sleeves *g h* are of such length, and they are so located with reference to each other and the guide-rod *k* and the shuttle-carrier *j*, as, in the vibration of the arms *e f*, to cause the said arms to have in their forward and backward motions a direct pull and push toward the center of the resistance to be overcome without tendency to exert binding-strain between the arms and compound sleeve.

This sleeve *h* is shown extended below sleeve *g*, in order that it may hold the foot *i* of the shuttle-carrier *j* and insure that it always maintains its vertical position in the same plane during all the positions occupied by it during its reciprocations.

The foot *i* is of such length as to extend below or to the line of movement of the end 6 of the shuttle-lever, to thereby make the movement more positive and with the least binding action.

This compound sleeve serves as a swivel to transmit to the shuttle-carrier positive rectilinear motions from vibrating levers, and to maintain the shuttle-carrier in the same vertical plane.

The lay, supposed to be represented by the letter *s* and provided with a reed, all as usual, has its fulcrum at 10, and by pin 11 is con-

nected with a rod, *t*, forked at its other end, to embrace the shaft *b*, and the rod *t* has a pin, 13, which enters a cam-groove, 14, in a disk, *w*, attached to the said shaft *b*.

These cam-grooves 2 and 14 are so shaped, and the hubs and disk are so arranged on the shaft *b*, that while the shuttle-levers are at rest at opposite sides of the loom the lay will be quickly thrown forward to beat up the weft and be returned, after which, while the lay remains at rest at its back stroke, the shuttle-carriers will be quickly thrown to the center of the loom to carry and take the shuttle across between the warps, and will return to their position at the outer edges of the warp.

I claim—

1. The shuttle-levers and their actuating cams, combined with the yielding link, adapted to press the pins of the levers against corresponding sides of the walls of the cams, substantially as described.

2. The shuttle-levers *e f*, and the yielding link and the shuttle-carriers and guide-rods, combined with the compound sleeves *g h*, adapted to receive the ends of the shuttle-levers and the feet of the shuttle-carriers at right angles each to the other, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CHARLES FOSDICK.

Witnesses:

FREDERICK FOSDICK,  
DENNIS KEEFE.