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Letters Patent No. 86,483, dated February 2, 1869.

IMPROVEMENT IN SHUTTLES FOR 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, NORMAN A. WILLIAMS, of Utica, in the county of Oneida, and State of New York, have invented a new and useful Improvement in Shuttles; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

This invention relates to improvements in shuttles for looms, whereby it is designed to provide an improved spring-mechanism for holding the spindle either in the elevated position for receiving the bobbin or cop, or in the position for delivering the yarn in weaving, and admit of moving it readily from one position to the other.

The accompanying drawing represents a longitudinal section of a shuttle having my improvements attached.

a represents the spindle pivoted at *b*, and provided with the rear extension *c*, which may be of any preferred length, to the rear of which the bent spring *d* is secured by one end, the other hooked end being arranged to take into the notched end of the toggle-arm *e*, arranged to oscillate on the pin *f*, or any other suitable seat, as, for instance, a socket in the stock of the shuttle.

The chamber in the stock of the shuttle is so formed that the upper wall *g*, and the inclined wall *h*, below the toggle-arm, serve as stops for the said arm in its movement in either direction, and in order to insure the maintenance of the spindle firmly in either position, the walls of the recess are so formed that when in the elevated position, the shoulder *i*, of the spindle, will rest on the projection *j* of the stock, and when in the other position, the rear extension will bear under the wall *k*.

It will be seen that by this arrangement, the spring

d is under the greatest tension when the toggle-arm *e* is on the right line, between its axis *f* and the axis *b* of the spindle, and consequently will have a tendency to force the toggle-arm and the spindle in either direction from that line, as it may be passed to either side of it by the operator, and will therefore maintain the spindle in either position.

An important advantage of this arrangement is that there are no sliding parts, which soon wear, and produce undue friction, as in other shuttles.

l represents a catch-spring, for holding the bobbins, also secured to the extension of the spindle, and provided with a hooked end, to take into the grooves in the base of the said bobbins, and arranged to be thrown out of connection therewith when the spindle is raised up by the action of the pin *m*, as is clearly shown in the drawing.

The said spring *l* may be dispensed with when cops are used.

Care should be taken in adjusting the walls *g* and *k*, for stopping the toggle-arm, and the extension of the spindle in the right position for maintaining the spindle in line with the eye of the shuttle through which the yarn is drawn.

I claim as new, and desire to secure by Letters Patent—

1. The combination, with the extension *c*, of the spindle of the spring *d*, substantially as and for the purpose described.

2. The combination, with the spring *d*, arranged as described, of the toggle-arm *e*, substantially as and for the purpose specified.

NORMAN A. WILLIAMS.

Witnesses:

GEORGE J. BUCHANAN,
IRVIN A. WILLIAMS.