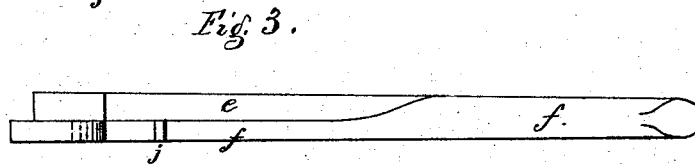
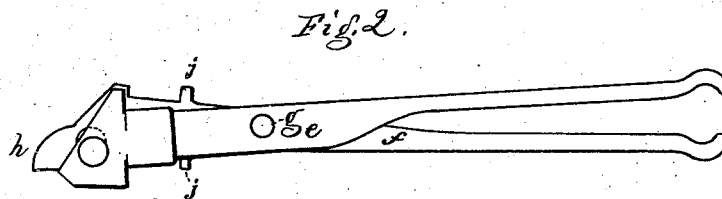
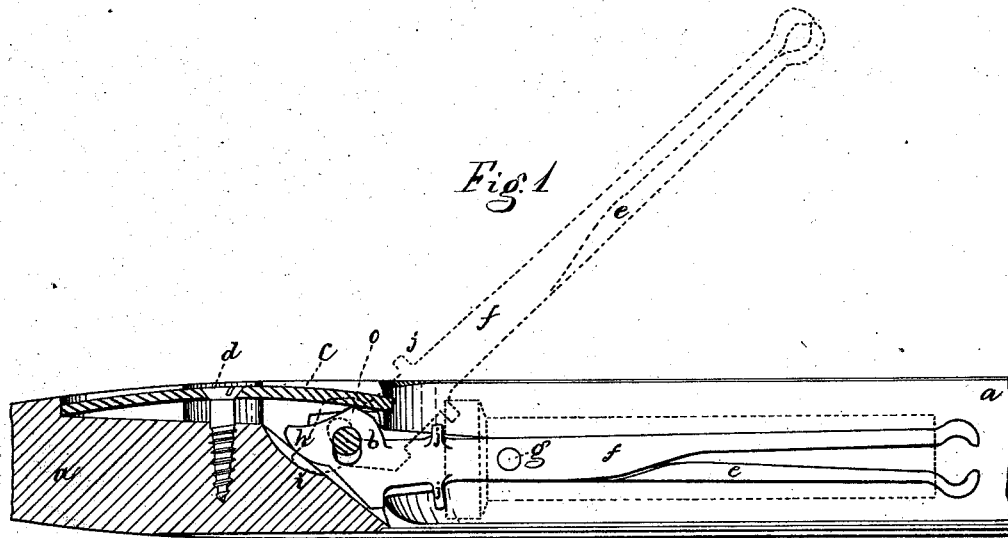


J. A. CROSBY.  
Weavers' Shuttle.

No. 161,101.

Patented March 23, 1875.



Witnesses.  
E. H. Lattimer.  
Wm. Pratt.

Inventor.  
John A. Crosby  
PER Crosby & Gregory

ATTYS.

# UNITED STATES PATENT OFFICE.

JOHN A. CROSBY, OF LAWRENCE, MASSACHUSETTS.

## IMPROVEMENT IN WEAVERS' SHUTTLES.

Specification forming part of Letters Patent No. 161,101, dated March 23, 1875; application filed March 6 1875.

*To all whom it may concern:*

Be it known that I, JOHN A. CROSBY, of Lawrence, in the county of Essex and State of Massachusetts, have invented an Improvement in Weavers' Shuttles, of which the following is a specification:

This invention is an improvement on that common form of bobbin-carrying shuttle in which the bobbin-spindle is bifurcated, and each part of the bifurcation made as a spring, which parts are pressed toward each other when placing a bobbin thereon, or when taking one therefrom.

The difficulties with such bobbin-spindles are that they rapidly wear out the bore of the bobbins, and consume time and cause unnecessary effort in shifting the bobbins, which difficulties are entirely obviated by the use of my invention.

I make my improved bobbin-spindle for loom shuttles in two pieces, pivoted together similarly to the blades of a scissors, giving to the free ends of the pieces a bulbous formation, and twisting said ends ninety degrees when hot, so that the salient ends move in opening and closing in a direction at right angles to the movement of the parts forming the spindle-butt; and the mechanism is such that when the bobbin-spindle is elevated in the shuttle the free ends thereof are closed to facilitate changes of bobbins, while when the spindle is horizontal in the shuttle in its normal position for work the free ends of the spindle are open and gripe the bobbin, so that accidental displacement thereof is impossible.

In the drawing, Figure 1 shows, in sectional elevation, a portion of a shuttle provided with my improved spindle, the full lines of the spindle exhibiting it with its free ends spread apart, and in horizontal position, with a bobbin dotted thereupon, the dotted lines of the spindle showing it as raised, and with its free ends closed, so as to permit easy change of bobbins. Fig. 2 is a view of the side of the spindle opposite to that shown in Fig. 1, the spindle in this view being in its horizontal position, with its free ends spread apart. Fig. 3 shows the spindle in plan, as it appears in its horizontal position.

*a* is the body of the shuttle; *b*, the pivot passing through the shuttle-body and the spindle-butt; *c*, the spring which operates on the spindle-butt, and *d* the screw which confines the spring and causes it to press upon the spindle-butt. *e* and *f* are the two parts which form the spindle. They are pivoted together by the rivet *g*, the piece *f* turning on the rivet *g* relatively to the piece *e*. In the butt part of piece *e* pivot *b* fits closely, while in the butt part of piece *f* the hole through which the pivot *b* passes is slotted in the arc of a circle struck from the center of the rivet *g*, which allows movement of *f* relatively to *e*. When the spindle is thrown upward, as in dotted lines, Fig. 1, the projecting end *h* of the butt part of *f* strikes upon the wood of the shuttle at *i*, and causes piece *f* to turn on rivet *g*, so as to make the free or bulbous end of *f* approach the free or bulbous end of *e*, in which condition the bobbins can be moved freely off and on the spindle. When the spindle is turned down, as shown in full lines in Fig. 1, then the spring bearing on point *o* of the piece *f* makes said piece turn on the rivet *g* relatively to piece *e*, and spreads apart the bulbous ends, making it impossible for the bobbin to slide off from the spindle. The projections *j j* on piece *f* are stops for the end of the bobbin.

I claim—

1. The combination of the part *e* of the spindle, arranged to be pivoted to the shuttle-body, with the part *f* pivoted to part *e*, and provided with a butt adapted to operate in connection with the spring *c* and shuttle-body, substantially as described.

2. The combination of the shuttle-body and its spring with the two-part spindle *e f*, curved or made bulbous, and pivoted together and adapted to operate substantially as described.

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

JOHN A. CROSBY.

Witnesses:

G. R. WATERMAN,  
T. H. FERNALD.