# E. A. Paine.

## Shuttle for Looms.

No. 100,317. Patented Mar. 1. 1870.

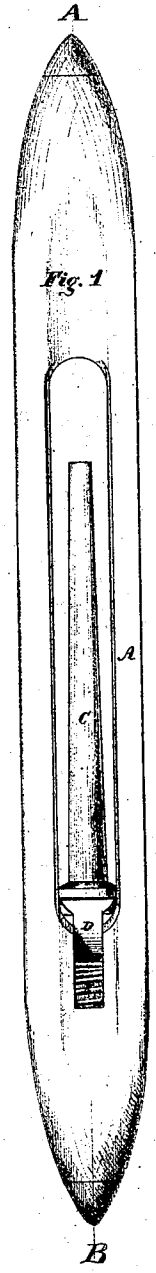


Fig. 1

Fig. 2

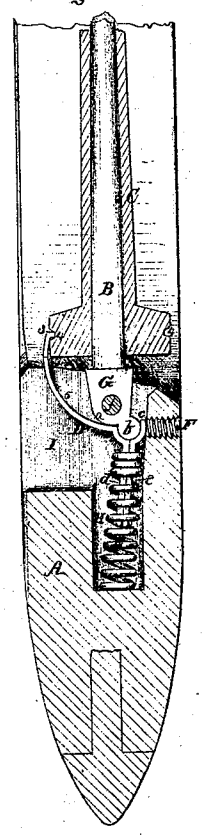


Fig. 4

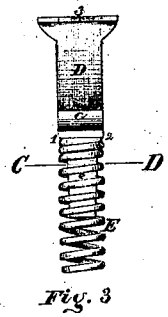


Fig. 3

Witnesses

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ELIAS A. PAINE, OF GRAFTON, MASSACHUSETTS.

*Letters Patent No.* 100,317, *dated March* 1, 1870.

## IMPROVEMENT IN SHUTTLE 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, ELIAS A. PAINE, of Grafton, in the county of Worcester, and Commonwealth of Massachusetts, have invented certain new and useful Improvements in Shuttles; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings forming a part of this specification, in which—

Figure 1 represents a bottom view of my improved shuttle;

Figure 2 represents a central section of one end of my improved shuttle on line A B, fig. 1;

Figure 3 represents a top view of the spring and catch, separate from the body of the shuttle; and

Figure 4 represents a transverse section of the spring at line C D, fig. 3.

To enable those skilled in the art to which my invention belongs to make and use the same, I will proceed to describe it more in detail.

The nature of my invention consists—

First, in a peculiarly-constructed catch-piece for holding the bobbin, as hereafter explained.

Secondly, in the combination with the head of the spindle, of a peculiarly-constructed holding-device, substantially as hereafter explained.

Thirdly, in the combination with the head of the spindle, of a leveling-screw, as hereafter described.

Fourthly, in the combination with shanks, the catch and leveling-pieces, of an oval spring for holding the same, as hereafter explained.

In the drawings, the part marked A is the wood of the shuttle, B the spindle, C the bobbin, D the catch-piece, E the coiled oval spring for holding the catch-piece and spindle in position, and F the leveling-screw.

The head G of the spindle B is made in curved form at the point *a*, with a cylindrical projection, *b*, so fit between the catch-piece D and the leveling-piece *c*, as fully shown in the drawings.

The stems *d e* of the catch-piece D, and leveling-piece *c*, are fitted to enter the front end of the coil spring E, the rear end of which presses against the end of the slot or hole H of the shuttle-wood A, as shown in fig. 2.

The catch-piece D and leveling-piece *c* are provided with shoulders 1 and 2, against which the front end of the spring E presses; the coils of the spring being wound close to each other at the end, for the purpose of holding the catch-piece and leveling-piece securely together.

The shuttle-wood A is slotted out at I, to allow of the catch-piece D being thrown back to release the bobbin C when the spindle B is turned out, so as to throw the cylindrical portion *b* of the spindle-head upon the opposite side of the fulcrum-pin *f* from that which it occupies when the bobbin is in place, as shown in fig. 2. The hole H in the shuttle-wood A is made large enough to allow the front end of the spring E to rock back and forth, to conform to the movement of the catch and leveling-pieces D *c* during the operation of changing the bobbin, which is effected as follows:

Assuming the bobbin and spindle to be in the position shown in fig. 2, the point of the spindle B is swung to the right on the pivot *f*, which throws the projection *b* to the left, carrying with it the catch and leveling-pieces D and *c*, and the front end of the spring E sufficiently far to throw the point 3 of the catch-piece D out of the groove 4 in the bobbin-head, and also far enough to pass the cylindrical piece *b* by the center of the fulcrum-pin *f*, for the purpose of permitting the pressure of the spring E to act on the spindle B, in such a manner as to hold it out until the bobbin C has been replaced by a full one, when, with a slight pressure at the end of the spindle, the projection *b* repasses the center of the fulcrum *f*, and the spindle and bobbin are thrown into place within the shuttle and there held by the spring E.

The screw F is to be turned in, so that the curved end of the leveling-piece *c* will strike and rest against its point when the spindle is in a level position.

The catch-piece D and leveling-piece *c* can, if preferred, be made in one piece, although I prefer to make them as shown in the drawings.

When the shuttle is made for using cops, the front curved portion 5 of the catch-piece D, may be left off.

From the foregoing description, it will be seen that my devices for holding the spindle and bobbin in place can be easily made and applied to the shuttle; besides, they do not add so much weight to the shuttle as to throw it very much out of balance, which is a great desideratum in the manufacture of shuttles.

Having thus described my improved shuttle,

What I claim therein as new and of my invention, and desire to secure by Letters Patent, is—

1. The peculiarly-constructed catch-piece D, arranged for operation substantially as and for the purposes set forth.

2. The combination with the spindle-head G, provided with the cylindrical projection *b* of the leveling-piece *c*, and shank part *d* of the catch-piece D, when all are constructed substantially as and for the purposes set forth.

3. The combination with the spindle-head G and leveling-piece *c* of the leveling-screw F, said parts being constructed and arranged substantially as and for the purpose set forth.

4. The combination with the shanks *d e*, of the catch and leveling-pieces D *c* of the oval spring E, substantially as and for the purposes set forth.

ELIAS A. PAINE.

Witnesses:

THOS. H. DODGE,

CHAS. H. BURLEIGH.