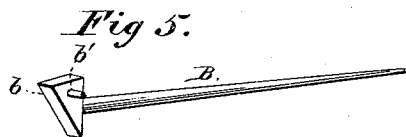
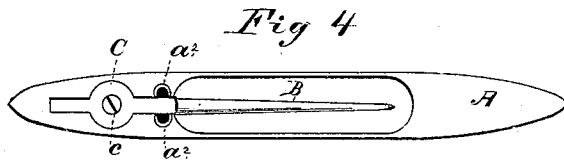
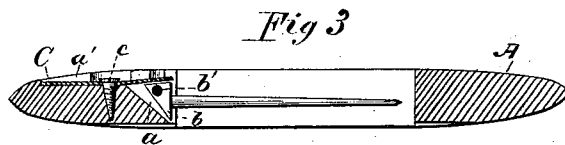
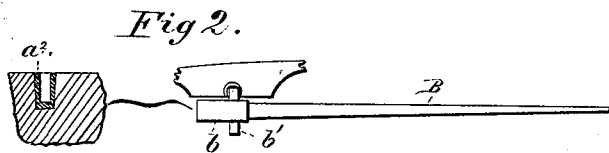
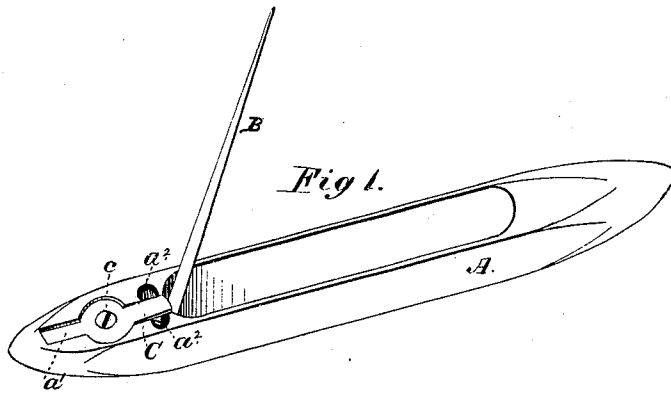


C. A. HOOPER.
Loom-Shuttles.

No. 150,240.

Patented April 28, 1874.



Witnesses;
 Harry L. Clark.
 H. C. Matthews.

Inventor.
 Cyrus A. Hooper
 by H. W. Beadle & Co.
 Attys

UNITED STATES PATENT OFFICE.

CYRUS A. HOOPER, OF LEWISTON, MAINE.

IMPROVEMENT IN LOOM-SHUTTLES.

Specification forming part of Letters Patent No. **150,240**, dated April 23, 1874; application filed February 14, 1874.

To all whom it may concern:

Be it known that I, CYRUS A. HOOPER, of Lewiston, in the county of Androscoggin and State of Maine, have invented a new and useful Improvement in Loom-Shuttles; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

This invention consists in providing the shuttle, upon each side of the space designed for the shank of the spindle, with a vertical groove, adapted to receive and hold the end of the transverse pin which secures the spindle in place, the object being to permit the spindles to be readily removed from and replaced in the shuttle without injury to the shuttle or spindle, by means of which the difficulties incidental to the removal of the spindle in the old shuttle are entirely obviated, the removal of the transverse pin in the old shuttle causing its hold upon the wood to be lessened, so that it was liable to project and cut the reed.

In the drawings, Figure 1 represents a perspective view of a shuttle having my improvement applied thereto; Fig. 2, partial views enlarged; Fig. 3, a central sectional elevation; Fig. 4, a plan view, and Fig. 5 a perspective view of the spindle detached.

To enable others skilled in the art to make and use my invention, I will now proceed to describe fully the construction of the same and the manner of using it.

A represents a shuttle, which may be constructed generally in the usual well-known manner, being provided with the usual space *a* for the shank of the spindle, and the recess *a'* for the securing-spring, which covers the spindle-shank. It is further provided, however, upon each side of the space designed for the spindle-shank, with a vertical groove cut

down from above, or up from below, a suitable distance into the body of the shuttle, as shown. *a² a²* represent metal pieces, preferably placed in these grooves, which, for convenience in insertion, may be circular in their exterior outlines, and tapering in form from top to bottom, as shown. B represents the spindle, constructed in the usual manner, with the head *b*, having the transverse orifice for the securing-pin *b'*. The vertical groove in the shuttle and the transverse securing-pin are adapted to each other, so that when the spindle is placed in the shuttle the metal pieces of the grooves will furnish proper bearings for the pin. C represents the spring, which covers the shank of the spindle, and secures the same from displacement, it being removably attached to the shuttle by means of the screw *c*, in the usual well-known manner.

If the spindle is let into the shuttle from the lower side, the vertical groove must, of course, be extended from that side.

By means of the described construction, the shuttles are adapted to have their spindles removed for any purpose without injury; and any known kind of spindle may be inserted without changing, in any respect, the construction of the shuttle.

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

The shuttle provided with grooves, as described, when combined with the spindle having a shortened transverse pin and a spindle-securing device, substantially as described.

This specification signed and witnessed this 10th day of February, 1874.

CYRUS A. HOOPER.

Witnesses:

FRED. B. SANDS,
ALVIN B. BLAKE.