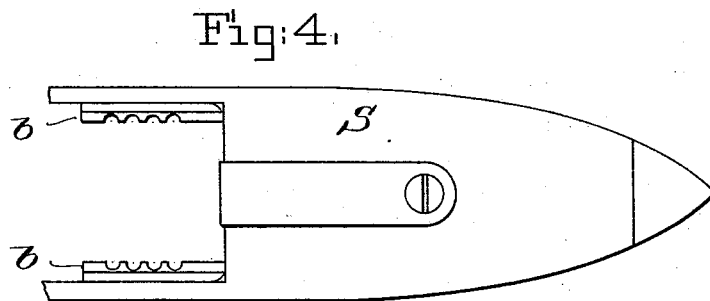
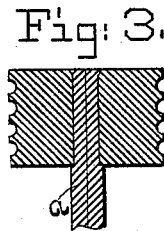
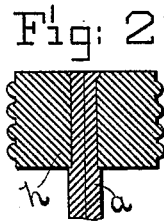
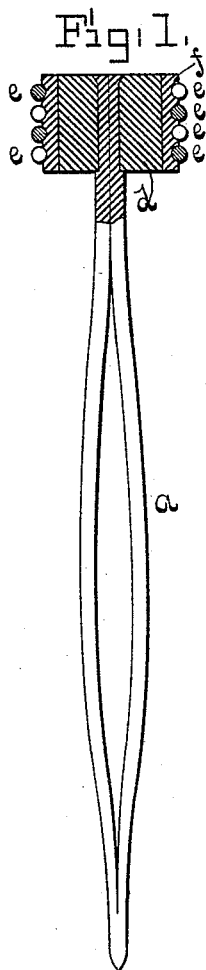


(No Model.)

J. H. NORTROP.  
SPINDLE FOR LOOM SHUTTLES.

No. 454,811.

Patented June 23, 1891.



Witnesses:

Edward F. Allen  
Fred S. Grumbleaf

Inventor.

James H. Northrop  
by Lemley Gregory attys.

# UNITED STATES PATENT OFFICE.

JAMES H. NORTHROP, OF HOPEDALE, MASSACHUSETTS, ASSIGNOR TO GEORGE DRAPER & SONS, OF SAME PLACE.

## SPINDLE FOR LOOM-SHUTTLES.

SPECIFICATION forming part of Letters Patent No. 454,811, dated June 23, 1891.

Application filed March 23, 1891. Serial No. 386,045. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES H. NORTHROP, a subject of the Queen of Great Britain, but residing at Hopedale, county of Worcester, State of Massachusetts, have invented an improvement in Spindles for Loom-Shuttles, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

I have described in application Serial No. 380,494 a loom containing a hopper provided with spindles containing filling, the said loom containing a pusher to push the spindles from the hopper into a shuttle in the shuttle-box of the lay, the said shuttle being open at one side for the reception of a full spindle and at another side for the discharge of a spent spindle.

The spindle herein shown is designed to be used in connection with a loom-shuttle of the class referred to, although it might be used with any suitable shuttle having proper holding devices to retain the head of the spindle.

In accordance with this invention a metallic spindle is provided with a head having an annular rib or projection adapted to be engaged by jaws of a shuttle, the said jaws having a corresponding rib or projection. Preferably the spindle will be of the split or expansible variety. The spindle may have yarn spun on it, or a cop-tube filled with yarn may be placed, and this spindle may be thereafter put into the shuttle.

Figure 1 shows a spindle embodying my invention; Figs. 2 and 3, modifications; and Fig. 4 shows a part of a shuttle with jaws adapted to hold the head of the spindle.

My improved spindle has a metal blade *a*, and preferably this blade will be made expansible or be a split blade. The construction of the blade may correspond with any usual form of spindle-blade adapted to carry and keep in place a cop-tube or bobbin containing filling. The enlarged head *d* of the spindle is substantially circular in cross-section, and to enable the jaws *b* of the shuttle *S* to hold the spindle in horizontal position and against endwise motions said head is provided with one or more annular ribs or projections *e* to be engaged by correspondingly-shaped ribs or projections of the jaws *b*. The head shown in Fig. 1 is supposed to be com-

posed of a circular block of metal and a cylindrical jacket *f* of wood having ribs or projections of wire laid about it.

In the modification Fig. 2 the entire head *h* may be of metal or of wood, and the rib or projection may be formed integral with the head, the projection standing out and being convexed.

In the modification Fig. 3 the spaces between the projections are concaved. This invention is not, however, limited to any exact shape of the projections in cross-section.

The use of the wooden jacket *f* lends to cheapness of construction, for the wire projections could not be as well retained in place on a plain cylinder of iron, and to solder the wire in place or have annular grooves would add to the cost of the spindle.

The spindles are handled very carelessly by the operatives, and the ribs or projections have to be strong and of such construction that they cannot be bent out of shape by throwing the bobbins into boxes.

I am aware that a shuttle-spindle has had an annular groove to be entered by a spring-pressed pin carried by a head pivoted in a shuttle, as in United States Patent No. 21,068; and I am also aware that a spindle has had two notches opposite each other to co-operate with a head pivoted in a spindle and with a pin fixed in a shuttle, as in United States Patent No. 2,489.

I claim—

1. A loom-shuttle spindle provided with a head having one or more ribs or projections adapted to be embraced and held by jaws of a shuttle, substantially as described.

2. An expansible spindle having a head provided with one or more ribs or projections adapted to be held by the jaws of a shuttle, substantially as described.

3. A loom-shuttle spindle having a head provided with a non-metallic jacket, to which are applied one or more annular ribs or projections, substantially as described.

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

JAMES H. NORTHROP.

Witnesses:

F. J. DUTCHER,  
GEO. OTIS DRAPER.