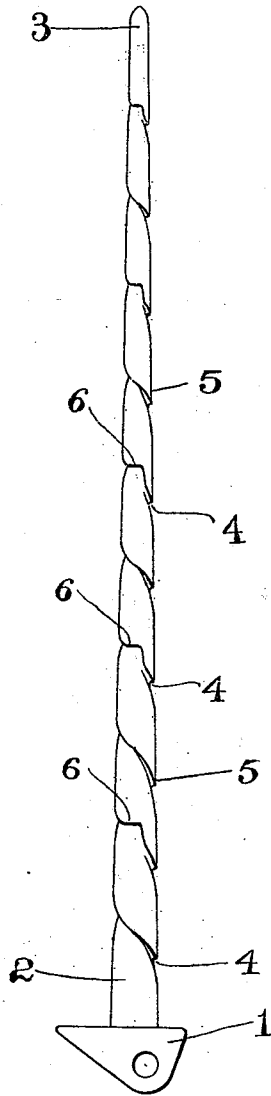


(No Model.)

H. A. FOSTER.  
SPINDLE FOR LOOM SHUTTLES.

No. 515,206.

Patented Feb. 20, 1894.



Witnesses:

Arthur F. Raudall,  
Robert Wallace.

Inventor:

Hiram A. Foster  
by Macleod Calver & Raudall  
his Attorneys.

# UNITED STATES PATENT OFFICE.

HIRAM A. FOSTER, OF LOWELL, MASSACHUSETTS, ASSIGNOR OF ONE-HALF  
TO EDWARD W. THOMAS, OF SAME PLACE.

## SPINDLE FOR LOOM-SHUTTLES.

SPECIFICATION forming part of Letters Patent No. 515,206, dated February 20, 1894.

Application filed July 12, 1893. Serial No. 480,260. (No model.)

*To all whom it may concern:*

Be it known that I, HIRAM A. FOSTER, a citizen of the United States, residing at Lowell, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Spindles for Loom-Shuttles, of which the following is a specification, reference being had therein to the accompanying drawing.

My invention relates to spindles for loom shuttles.

It has for its object to provide a spindle of simple, durable, and efficient character and construction, which shall admit of being cheaply and economically made, and which shall obviate various objections appearing in practice to the ordinary split spring shuttle-spindle now in general use. The said split spring spindle normally expands so as that its parts are spread apart to their fullest extent, and when thus expanded the resistance which the said parts of the spindle oppose to the pressure which tends to bear them toward each other, causes the spindle to offer considerable resistance to the slipping of a cop of yarn thereon, and necessitates the exertion of considerable force in performing this act. The endeavor to place a cop upon the said spindle results sometimes in breakage of the cop, and often in disarrangement of the coils of yarn composing the same, which are disadvantageous, as is well-known to those skilled in the art. In addition, notwithstanding this resistance which the split spindle offers when it is sought to make application of a cop thereto, the said split spindle often fails to exert sufficient pressure against the interior of the cop when the latter has been pushed fully onto the spindle, to enable the spindle to securely retain the cop in place upon itself, and hence it frequently happens that in practice, during weaving the cop becomes loosened and dislodged from the said spindle in consequence of the shocks and blows received by the shuttle, and when thus dislodged passes into the throat of the shuttle-body. These objections are obviated by the improved shuttle spindle embodying my

invention, which I now shall proceed to describe with reference to the accompanying drawing, which latter is a view of the said spindle in elevation.

In the drawing, the usual head of the spindle is shown at 1, and the blade thereof at 2. The said blade is made solid, and, also, it is made of tapering form from the head-end thereof to the tip 3, as shown, in order to facilitate its introduction into the hole at the center of the cop. On the exterior of the said tapering blade, I provide or form a retaining spiral 4, which is intended to engage with the interior coils of yarn composing the cop. Preferably, this retaining spiral is produced by forming a spiral groove in the exterior of the spindle-blade as shown. The interior coils of yarn at the cop sink into this groove, as will be readily understood. The side of the groove which is toward the tip of the spindle, which side for convenience may be termed the forward side, may, with advantage, be formed as shown to extend radially, or substantially so, outward from the bottom of the groove. This increases the hold upon the cop. The other side may be made to slope, as shown, to facilitate the entrance of the coils of yarn into the groove. The spiral retainer is not, in itself, adequate to completely guard against the dislodgment of the cop, and if used alone will permit the cop to pass gradually along the spindle toward the tip of the latter, until it becomes loosened sufficiently to become dislodged as hereinbefore mentioned. I therefore provide at intervals on the spindle-blade, transversely extending checks 6 in the form of lateral brakes in the spiral course of the forward wall of the groove. These lateral brakes form shoulders at right angles to the length of the spindle, and prevent entirely the endwise movement of the cop that the spiral retainer otherwise would allow.

The spiral retainer is important and valuable inasmuch as it secures a continuity of engagement with the interior of the cop, and the checks or lateral brakes located at intervals in the length of the spiral retainer co-

operate therewith to resist the tendency to movement still permitted by the spiral retainer.

I claim as my invention—

- 5 1. The spindle for loom shuttles, having a spiral retainer for the cop, and transversely extending checks located at intervals on the spindle-blade, substantially as described.
- 10 2. The spindle for loom shuttles, having a spiral retainer produced by a groove extending spirally around the spindle-blade and also transversely extending checks located at intervals on the spindle-blade, substantially as described.
- 15 3. The spindle for loom-shuttles having a spiral retainer produced by a groove extending spirally around the spindle-blade, and

also checks extending transversely from said spiral retainer at right angles to the length of the spindle, substantially as described. 20

4. The solid spindle for loom-shuttles having a spiral retainer produced by a groove extending spirally around the spindle-blade with the forward side of the said groove substantially radial as shown, and also having 25 checks extending transversely from said spiral retainer at right angles to the length of the spindle, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

HIRAM A. FOSTER.

Witnesses:

CHARLES MEVIS,  
GEORGE W. POORE.