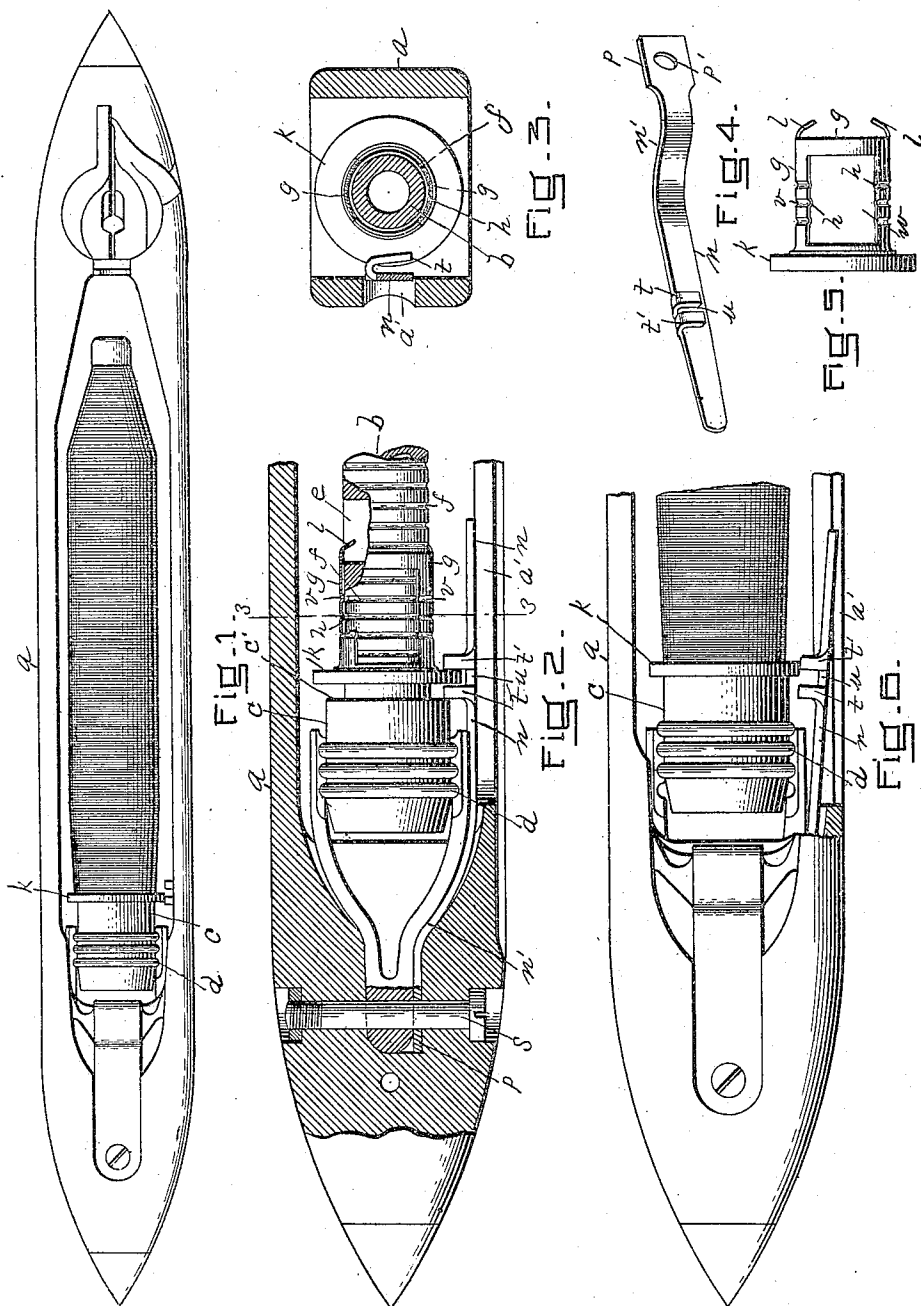


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PATENTED DEC. 18, 1906.

J. E. LEMYRE.
SHUTTLE FOR COTTON LOOMS.
APPLICATION FILED MAR. 14, 1906.



WITNESSES

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JOSEPH E. LEMYRE, OF MANCHESTER, NEW HAMPSHIRE.

SHUTTLE FOR COTTON-LOOMS.

No. 838,629.

Specification of Letters Patent.

Patented Dec. 18, 1906.

Application filed March 14, 1906. Serial No. 305,967.

To all whom it may concern:

Be it known that I, JOSEPH E. LEMYRE, a citizen of the United States, residing in Manchester, in the county of Hillsboro and State of New Hampshire, have invented a new and useful Improvement in Shuttles for Cotton-Looms, of which the following is a specification.

This invention relates to shuttles having bobbins of the style provided with a filling change, and more specifically to bobbins which are provided with a tube or sleeve on the spindle, which is held in position by the thread until but little thread is left on the spindle when said tube or sleeve moves from its position and allows the bobbin to be thrown off, bobbins provided with conical sleeves being illustrated in Letters Patent of the United States, dated June 14, 1904, and numbered 762,422, and dated May 2, 1905, and numbered 788,806; and the invention relates particularly to that class of devices of this character in which the feeler, instead of striking a conical sleeve, directly strikes a spring intermediate of said sleeve and feeler and secured to the shuttle in such a manner and position with relation to the head as to prevent the tube or sleeve from returning to its original position after it has been thrown off by the feeler acting directly on the spring, an invention of this class being the subject of an application filed by me on the 6th day of December, 1905, Serial No. 290,558.

In my present invention I provide a non-conical sleeve or tube of substantially even diameter internally throughout its length, with the exception of certain annular internal ribs adapted to fit in the grooves in the spindle, said sleeve or tube being provided at the end next the head with an annular flange which normally holds off the spring which receives the blows of the feeler and when but little thread is left on the spindle allows said spring to drop on opposite sides of the flange, thus locking the sleeve and preventing it from longitudinal movement, but not swinging it out of parallelism with the spindle, as is the case when a spring strikes a conical feeler-stop.

The nature of the invention is fully described below and illustrated in the accompanying drawings, in which—

Figure 1 is a plan view of a shuttle embodying my invention, showing the bobbin in a full condition. Fig. 2 is an enlarged view, mostly in horizontal section, with the

thread unwound and with the sleeve locked in the position assumed when there is little or no thread left on the spindle. Fig. 3 is a cross-section taken on line 3 3, Fig. 2, looking toward the left. Fig. 4 is a view of the spring removed. Fig. 5 is a view of the sleeve removed. Fig. 6 is a plan view of a portion of the shuttle with the bobbin in a full condition and in a slightly-different position from that illustrated in the other figures.

Similar letters of reference indicate corresponding parts.

a represents a shuttle constructed in the ordinary manner and provided with the longitudinal slot *a'*.

b is the spindle, and *c* the head thereof, provided with the usual rings or annular ribs *d*. The spindle, which is preferably hollow, is provided with opposite longitudinal slots *e* and with the usual annular parallel grooves *f*.

g represents a tube or sleeve on the spindle of diameter which is substantially uniform throughout the length of the sleeve, said sleeve being formed on its inner surface with small annular ribs *h*, which are adapted to register with the grooves *f* on the spindle, but which are somewhat broader than said grooves, so that they do not fit snugly therein and do not prevent the sleeve from being moved by force longitudinally on the spindle. The sleeve is of such a diameter, however, that there is practically no lateral movement. The end of the sleeve next the head of the shuttle is provided with an annular flange *k*, and the opposite end is provided with two inwardly-extending engaging projections *l*, which are bent, preferably, at obtuse angles and extend into the opposite slots *e*. This flange *k*, while it is normally next the inner end *c'* of the head *c* of the spindle, is not exposed to the direct blows of the feeler, for the reason that there is interposed between said flange and the feeler a spring *n*, which is bent at *n'* to connect with a shank or plate *p*, provided with the hole *p'*, through which the screw *s* passes, securing the plate to the inner wall of the shuttle. Thus this spring conforms to the shape of the shuttle and extends along its inner wall to and opposite the longitudinal slot *a'*. At the point in said slot next the end or face *c'* of the head *c* this spring is provided with an inwardly and downwardly bent extension *t*, and at a distance therefrom, which is practically equal to the thickness or width of the flange *k*, another extension *t'* is provided, said extensions pro-

viding a recess or groove *u* broad enough to receive the flange *k*.

In the first three figures the spring *u* is located in such relation to the shuttle that the extension *t* is next the face or end *c'* of the head *c*. In this position, which is its normal position, the extension *t* bears against the flange *k*, which holds the spring off, as shown in Fig. 1, in which position the said spring receives the blows of the feeler. When the thread is nearly unwound from the spindle and the sleeve *g*, the striking of the shuttle throws the sleeve inward on the spindle until its flange *k* is opposite the groove or space *u*, when the spring *n* flies into the position indicated in Figs. 2 and 3, thus locking the sleeve, with its flange *k*, in the groove *u* and preventing it from longitudinal movement on the spindle and at the same time allowing said spring to fly inward out of reach of the feeler.

By means of the ribs *h* external grooves *v* are formed on the sleeve *g*, which register with the grooves *f* on the spindle, and as the sleeve is provided with broad opposite openings *w* it is evident that some of the thread in the inner edges will extend from the grooves *v* into the grooves *f*, registering therewith, with the effect of binding the sleeve and spindle together and holding them united until there is a minimum quantity of thread remaining on the spindle before the sleeve moves from the position illustrated in Fig. 1 into that illustrated in Figs. 2 and 3. This is especially useful in the case of soft thread.

In Fig. 6 the spindle is illustrated as moved a little farther into the shuttle—that is, the distance between two of the ribs *d*. This brings the flange *k* normally against the second extension *t'*, and when the thread is reversed the flange drops beyond the extension *t'* instead of between the two extensions *t* and *t'*.

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

1. In a shuttle of the character described, a spindle provided with a suitable head; a sleeve on said spindle provided with an annular projection or flange; and a spring secured to the shuttle and extending between said sleeve and the slot in the side of the shuttle, and in the path of the feeler, said spring being provided with a projection which bears normally against the flange on the sleeve, and

with a recess beyond said projection, whereby when the thread is nearly or quite unwound the movement of the sleeve away from the head causes its flange to slip out of engagement with the projection on the spring and the recess to embrace the flange.

2. In a shuttle of the character described, a spindle provided with a suitable head; a sleeve on said spindle provided with an annular projection or flange; and a spring secured to the shuttle and extending between said sleeve and the slot in the side of the shuttle, and in the path of the feeler, said spring being provided with two projections one of which bears normally against the flange on the sleeve, said projections being at a distance apart sufficient to receive said flange between them when the thread is nearly or quite unwound and prevent the sleeve from longitudinal movement.

3. In a shuttle of the character described, a spindle provided with a suitable head; a sleeve on said spindle provided with an annular projection or flange; and a spring secured to the shuttle and extending between said sleeve and the slot in the side of the shuttle, and in the path of the feeler, said spring bearing normally against the flange on the sleeve and being provided with a recess or groove whereby when the thread is nearly or quite unwound the longitudinal movement of the sleeve will cause its flange to be locked into said recess or groove.

4. In a shuttle of the character described, a spindle provided with annular grooves; a sleeve on said spindle provided with annular grooves which register with the grooves on the spindle, said sleeve being provided with openings extending across its grooves whereby the coils of thread on and next said spindle extend from the grooves thereon into the registering grooves on the sleeve; a spring intermediate of the sleeve and the slot in the side of the shuttle, and in the path of the feeler; and a projection on said sleeve against which the spring normally bears, for the purpose set forth.

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

JOSEPH E. LEMYRE.

Witnesses:

ERNEST L. AUCTEL,
J. A. BOIVIN.