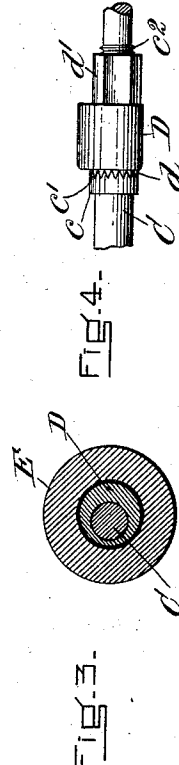
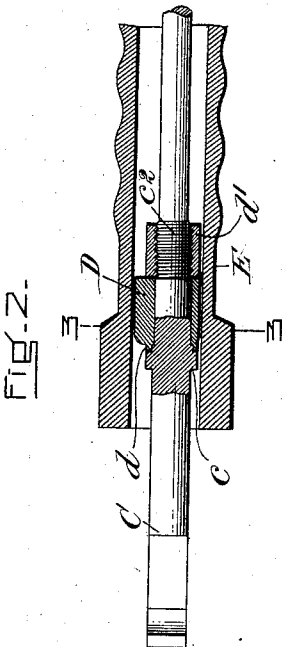
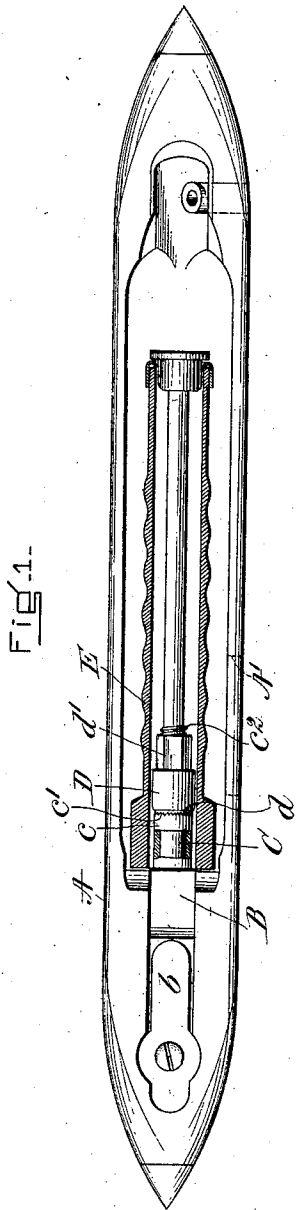


W. TOWNEND.
SHUTTLE.

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1,062,060.

Patented May 20, 1913.



WITNESSES:
H. C. O'Leary
A. E. O'Brien.

INVENTOR=
William Townend
By
Cochran & Co.
his attorneys.

UNITED STATES PATENT OFFICE.

WILLIAM TOWNEND, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO CHARLES E. RICHARDS, OF BRADFORD, ENGLAND, EDWARD W. ATKINSON, OF BROOKLINE, MASSACHUSETTS, AND ARTHUR A. HASERICK, OF BOSTON, MASSACHUSETTS, CO-PARTNERS AS RICHARDS, ATKINSON & HASERICK, OF BOSTON, MASSACHUSETTS.

SHUTTLE.

1,062,060.

Specification of Letters Patent.

Patented May 20, 1913.

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To all whom it may concern:

Be it known that I, WILLIAM TOWNEND, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, a subject of His Majesty George V, King of Great Britain, have invented a new and useful Improvement in Shuttles, of which the following is a specification.

My invention relates especially to an improvement in spindles for shuttles used on looms where a feeler or detector is used to stop the loom when all but a few yards of the filling or weft has been used off the bobbin. In shuttles made for this purpose the side of the bobbin on which the detector feels must always be held the same distance from the front of the shuttle; otherwise there will be a great variation in the amount of yarn left on the bobbin.

Hitherto in automatic shuttle changing looms and others using more than one shuttle where a detector is used the shuttle spindles are made of sufficient diameter to fit the hole in the bobbin, but this method has not been satisfactory especially where fine expensive yarns are used. Therefore I have invented a device by which the bobbin in each shuttle, no matter how many are used or how the shuttles vary in size, can be so adjusted that the distance between the face or front of the shuttle and the near side of the bobbin against which the detector feels will always be the same.

With my invention there is a very considerable saving of waste, also of time and trouble by not having to adjust the spindle or the size of the shuttle so long as they are near enough in size for the proper working of the loom. It comprises a spindle having an eccentric collar over which the lower end of the bobbin slips and which can be adjusted to adjust the relation of the bobbin to the inner wall of the shuttle and the detector. The bobbin is always bored true, but the spindle mechanism may be bent or set slightly out of true.

My invention will be understood by reference to the drawings in which—

Figure 1 is a plan of a shuttle embodying my invention, the bobbin being in section so as to show the spindle. Fig. 2 is a longitudinal section of a portion of the bobbin and spindle showing my improvement. Fig.

3 is a section on line 3—3 of Fig. 2, and Fig. 4 is an elevation of my improvement.

A is the shuttle having the spindle head B hinged therein in the usual way, *b* being the spring whereby the spindle is held in its normal position in the shuttle.

C is the spindle which has the usual means of engagement with the interior of the spindle head.

The spindle is provided with a shoulder *c* the upper edge of which is preferably roughened as at *c*¹ to engage the roughened edge *d* of the lower end of the eccentric collar D. The diameter of this collar D is approximately the inner diameter of the bobbin E which slips over it and is centered by it. The opening in the collar through which the spindle passes is eccentric so that by turning the collar the relation of the axis of the bobbin and the axis of the spindle can be adjusted as below described. The spindle is threaded as at *c*² to receive a set nut *d*¹ by means of which the collar D may be clamped against the shoulder *c*, the roughened surfaces of the shoulder *c* and collar D engaging and preventing the collar from turning while the set nut E is clamping them together.

In practice the filled bobbin is placed on the spindle in the usual way and put in operation. As the filling is drawn off the feeler or detector which usually reaches through the slot A¹ in the shuttle and strikes the filling, moves so far that the stop and change mechanism is operated. It can then be seen whether or not the bobbin has been properly emptied. If it has been, no adjustment is necessary, but if the bobbin has, for example, too much waste left on it the nut *d*¹ is turned to loosen the collar and the collar is turned so that the full side of the eccentric is turned toward the front of the shuttle. Thus the outer side of the bobbin when placed on the spindle will be brought nearer to the front of the shuttle which has the slot A¹ and the feeler will be restrained from moving into the shuttle to its operative position until the bobbin has been more completely emptied. If on the other hand all the filling has been delivered during the weaving operation so that the feeler can only stop the loom when the bobbin is actually empty, the collar is turned in the

other direction to throw the bobbin away from the slot A¹ and thus allow the feeler to reach its operating position earlier in the delivery of the filling. In either case after
5 the collar has been properly adjusted the nut is set up against it to clamp it against the shoulder *c*. After the spindles have been centered no further adjustment will be required so long as the shuttles keep equal
10 in size and the spindles fit properly in the sockets.

In the embodiment of my invention shown in the drawing the position of the bobbin can be adjusted between extremes about $\frac{1}{8}$
15 of an inch apart and this limit of adjustment will usually be sufficient to compensate for any fault in the centering of the spindle.

I do not mean to limit myself to the exact construction shown for I believe I am the

first to provide means for adjusting the bobbin laterally on the shuttle. 20

What I claim as my invention is:—

1. In combination with a shuttle, a spindle, and means effecting a lateral movement with relation to the spindle for adjustably
25 centering bobbins laterally on said spindle.

2. In a shuttle, a spindle having an eccentric collar mounted thereon and a bobbin adapted to slide over the collar and be centered thereby. 30

3. In a shuttle, a spindle having a shoulder, an eccentric collar to engage said shoulder and a set nut to clamp said collar against said shoulder.

WILLIAM TOWNEND.

Witnesses:

GEORGE O. G. COALE,
M. E. FLAHERTY.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."