

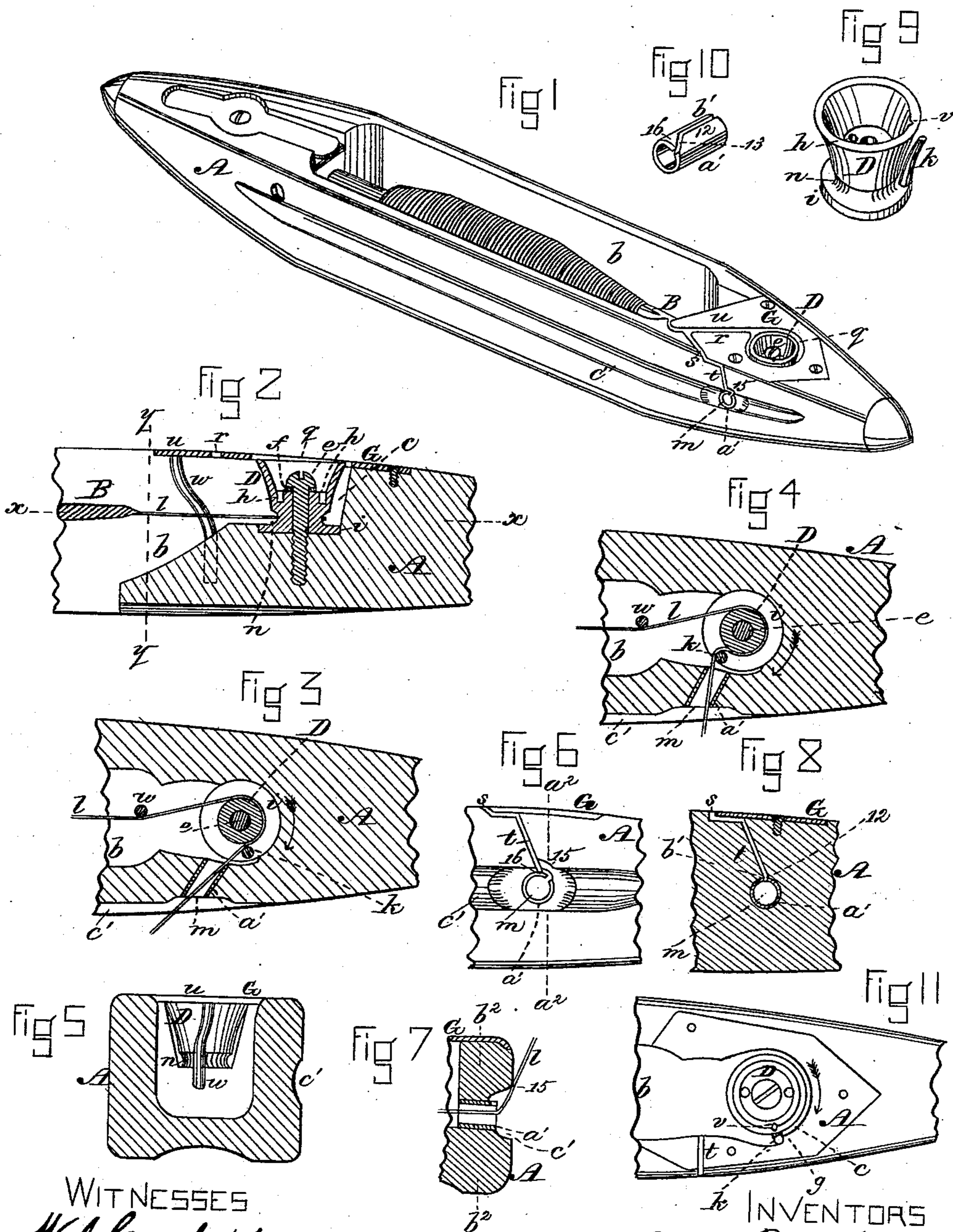
(No Model.)

A. B. TAYLOR & J. P. TIRRELL.

LOOM SHUTTLE.

No. 349,013.

Patented Sept. 14, 1886.



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# UNITED STATES PATENT OFFICE.

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## LOOM-SHUTTLE.

SPECIFICATION forming part of Letters Patent No. 349,013, dated September 14, 1886.

Application filed June 27, 1885. Serial No. 170,023. (No model.)

*To all whom it may concern:*

Be it known that we, AMOS B. TAYLOR, of Wollaston, in the county of Norfolk and State of Massachusetts, and JACOB P. TIRRELL, of Chelsea, in the county of Suffolk and State aforesaid, citizens of the United States, have invented certain Improvements in Loom-Shuttles, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a perspective view of a loom-shuttle having our improvements applied thereto. Fig. 2 is a central vertical section through one end of the same; Figs. 3 and 4, horizontal sections on the line  $x x$  of Fig. 2. Fig. 5 is a transverse vertical section on the line  $y y$  of Fig. 2. Fig. 6 is a side elevation of a portion of one end of the shuttle. Fig. 7 is a transverse vertical section on the line  $a^2 a^2$  of Fig. 6. Fig. 8 is a longitudinal vertical section on the line  $b^2 b^2$  of Fig. 7. Fig. 9 is a view of the tension-regulating swivel. Fig. 10 is a view of the metal eye-piece or bushing. Fig. 11 is a plan of a portion of one end of the shuttle, the metallic covering-plate being removed.

Our invention relates to loom-shuttles, and has for its object to provide a simple and effective device, capable of easy adjustment, for regulating with great nicety the tension of the thread as it runs from the cop or bobbin to the eye or educt, and also to facilitate the operation of directing the thread from the cop or bobbin to the eye.

To this end our invention consists in certain peculiar and novel features of construction and arrangement embracing a revoluble tension-regulating device, a slotted plate for guiding the thread to the tension-regulating device, a shuttle-body having a peculiar guide-slot for leading the thread to the shuttle-eye, and a peculiarly-constructed eye-piece; and our invention also consists in certain details of construction, as hereinafter set forth and specifically claimed.

In the said drawings, A represents the shuttle-body, and B the pivoted spindle located, as usual, within the recess or chamber  $b$ , the shuttle-body and spindle being constructed in any well-known manner.

At the end of the shuttle-body B, in front of the point of the spindle, is formed a recess,  $c$ , communicating with the chamber  $b$ , and within this recess  $c$  is placed a conical or cylindrical swivel or bell shaped thimble, D, which has continuous closed sides, and which is held in place by a screw,  $e$ , passing vertically through an aperture at its center into the body A, and forming a vertical pivot or center, around which the said thimble may be turned, a washer,  $f$ , of leather or other suitable material, being placed immediately under the head of the screw to produce sufficient friction to hold the swivel firmly, and yet allow it to be turned or adjusted around the screw  $e$  as a center, which may be accomplished by means of a key or wrench applied to holes  $h$ , or in any other suitable manner. Projecting up from the enlarged base  $i$  of this swivel is a pin or arm,  $k$ , between which and the outer surface of the swivel passes the thread  $l$ , which also passes partially around the body of the swivel on its way from the cop or bobbin to the eye or educt  $m$  in the side of the shuttle-body, and when the swivel is turned into the position seen in Fig. 3 the thread, after passing around it, will extend almost in a straight line to the eye  $m$  with the minimum amount of tension; but as the swivel is adjusted by turning it on its axis in the direction of the arrow the position of the pin  $k$  with respect to the eye  $m$  will be varied, and the thread will be compelled to take a more or less sharp turn around the pin  $k$  on its way to the eye, as seen in Fig. 4, thus causing it to be drawn with more or less friction against the pin  $k$  in accordance with the angle formed by the thread in passing around it, whereby the tension is increased or diminished, as desired. When the pin  $k$  is in the position seen in Figs. 3 and 11, its upper end lies in contact with a shoulder or projecting portion,  $g$ , of the wall of the recess  $c$ , as seen in Fig. 11, which thus serves as a stop for limiting the movement of the swivel in one direction, and thus preventing it from being moved out of its proper position. The thread is prevented from working upward by the tapering form of the swivel; but as a still further preventive we prefer to provide the swivel with an annular groove,

$n$ , near the base, for the reception of the thread, which lies therein, and is thus kept in place on a level with the eye  $m$ .

To the upper surface of the end of the shuttle-body A is fitted a metal plate, G, of the form seen in Fig. 1, having a circular aperture,  $q$ , which lies over and is of slightly larger diameter than the upper end of the swivel D, thus leaving an annular space between the two to allow of the thread being passed around the swivel, and leading into this aperture  $q$  is a diagonal slot,  $r$ , extending out to and through the end of the plate, this slot also communicating with a space or narrow passage,  $s$ , formed between the edge of the plate G and the inner wall of the chamber  $b$ , the said passage  $s$  communicating with an inclined slit or throat,  $t$ , in the side of the shuttle-body leading to the eye or educt  $m$ .

Extending down from the under side of the tongue or portion  $u$  of the plate G to the bottom of the chamber  $b$  is a guide-pin,  $w$ , bent in the form shown in Figs. 2 and 5, which serves to keep the thread in line with the axis of the spindle as it is drawn off the point of the same, thereby avoiding liability of breakage. Furthermore, the curvature or inclination of this pin counteracts any tendency of the thread to ride or work upward, and in connection with the tapering form of the swivel and the annular groove near the base thereof keeps the thread on a level with the eye  $m$ . The swivel is preferably provided with a notch or mark,  $v$ , to indicate the position of the pin or arm  $k$  and the consequent angle at which the thread is being drawn thereover to the eye  $m$ , thus facilitating the operation of regulating the tension.

In the operation of threading the shuttle the thread is first caught under the point of the tongue  $u$  of the plate G, and thence passed through the slot  $r$  to the aperture  $q$ , and around the swivel, and between it and the pin  $k$  back to the slot  $r$ , and again through the latter to the passage  $s$ , through which it is passed to the slit  $t$ , and thence into the eye  $m$ , the thread being in this manner rapidly and easily directed from the cop or bobbin to the eye  $m$ , requiring no special care or attention on the part of the weaver. The tapering form of the swivel enables the thread to be easily caught around its upper edge as it is passed around it, and also causes the thread to assume its proper position near the base of the same as it is carried back through the slot  $r$  and slit  $t$  to the eye  $m$ .

The metal eye-piece or tube  $a'$ , Fig. 10, which forms the bushing of the eye  $m$ , is provided with a slot,  $b'$ , the straight portion 12 of which lies immediately under and in line with the slit or throat  $t$  in the shuttle-body, so as to admit the thread. The outer end or portion, 13, of this slot  $b'$  is inclined, as seen in Fig. 10, by which means the passage through which the thread finally enters the eye is removed to one side out of line with the slit  $t$ ,

as seen in Figs. 1 and 6, so that the overhanging upper edge, 15, of the groove  $c'$  of the shuttle-body will prevent the thread from getting back into the inclined portion 13 of the slot  $b'$ , while the portion 16 of the eye-piece extends under the lower end of the slit  $t$ , and serves as a guard to prevent the passage of the thread thereto. Consequently after the thread has once been entered within the eye it cannot escape therefrom during the movements of the shuttle.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. The combination, with a shuttle-body provided with a thread educt or eye, of a swiveled thread-guiding thimble, D, secured in a recess in the shuttle-body, having continuous closed sides diverging upwardly from the base, a tension pin or arm,  $k$ , and an annular groove formed around its base, whereby the thread is prevented from working upward, substantially as herein described.

2. The combination, with the shuttle-body having a thread educt or eye and a slit or throat,  $t$ , in the side leading thereto, of a swiveled thread-guiding thimble having continuous upwardly-diverging closed sides, and a tension pin or arm,  $k$ , and a thread-guiding plate having a projecting tongue,  $u$ , a circular opening around the top of the thimble, and a narrow slit,  $r$ , formed between the tongue and main portion of the plate, and extending diagonally from the circular opening to and communicating with the slit or throat in the shuttle-body, substantially as herein described.

3. The combination, with a shuttle-body having an eye or perforation and a slit or throat,  $t$ , extending therefrom to the bobbin or cop holding chamber, of an eye-piece or bushing,  $a'$ , provided with a slit,  $b'$ , having a straight portion, 12, and a slot, 13, extending diagonally to bring its outside entrance to one side of the slit or throat  $t$ , whereby the escape of the thread from the eye is prevented, substantially as herein described.

4. The combination, with a shuttle-body having an eye or perforation and a slit,  $t$ , of an eye-piece or bushing,  $a'$ , provided with a slot,  $b'$ , having a straight portion, 12, parallel with the longitudinal axis of the eye-piece, and a slot, 13, communicating with and extending diagonally from the portion 12, thereby forming a guard, 16, which lies under the lower end of the slit  $t$  of the shuttle-body, substantially as herein described.

5. The combination, with the conical thimble having continuous closed sides and the pin extending upward from the base of the thimble, of the plate G, having opening  $q$  and slit  $r$  formed therein, and the slit  $s$  between it and the wall of the shuttle-body, the shuttle-body having the slit  $t$ , and the shuttle eye-piece having the slits 12 13, substantially as herein described.

6. The combination, with the shuttle-body having the recess  $c$ , the slit  $t$ , and the eye  $m$ ,

of the eye-piece *a'*, having the slits 12 13, the  
plate G, having the bent arm *w*, and formed  
with the opening *q* and the slit *r*, and having  
slit *s* between it and the shuttle-body, the  
5 thimble D, having the continuous closed conical  
sides, the groove *n*, base *i*, holes *h*, arm  
*k*, and flaring head, and the screw *e*, with its  
washer *f*, all constructed and arranged to operate  
substantially as herein described.

Witness our hands this 25th day of June, 1885.

AMOS B. TAYLOR.  
JACOB P. TIRRELL.

In presence of—

P. E. TESCHEMACHER,  
W. J. CAMBRIDGE.