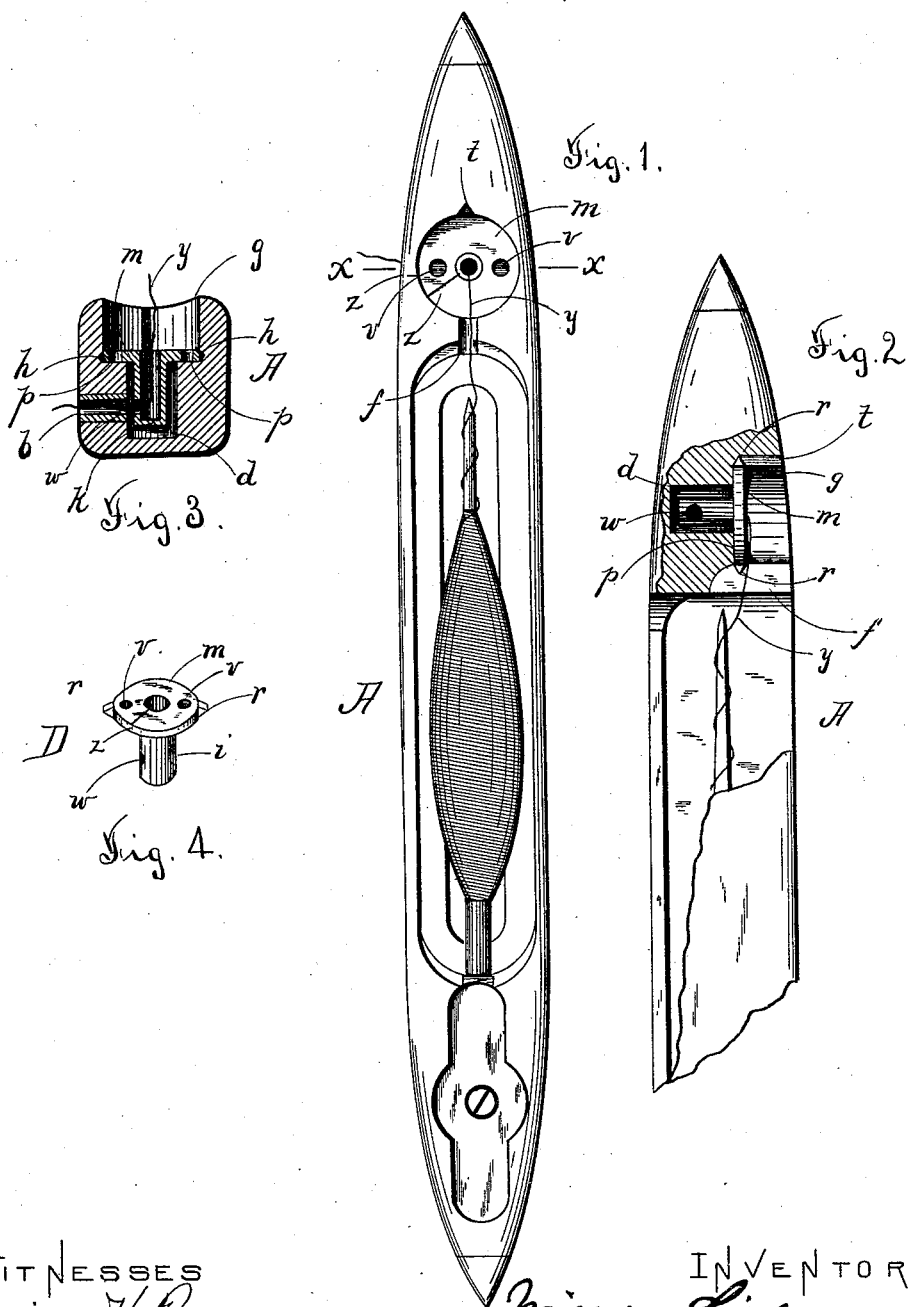


(No Model.)

W. LIVINGSTON.  
TENSION DEVICE FOR LOOM SHUTTLES.

No. 454,013.

Patented June 9, 1891.



WITNESSES  
Livingston, Ray,  
M. J. Egan  
H. Turfee

INVENTOR  
William Livingston,  
By C. A. Shaw & Co.  
ATTORNEYS

# UNITED STATES PATENT OFFICE.

WILLIAM LIVINGSTON, OF EXETER, NEW HAMPSHIRE.

## TENSION DEVICE FOR LOOM-SHUTTLES.

SPECIFICATION forming part of Letters Patent No. 454,013, dated June 9, 1891.

Application filed November 10, 1890. Serial No. 370,842. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM LIVINGSTON, of Exeter, in the county of Rockingham, State of New Hampshire, have invented certain new and useful Improvements in Tension Devices for Loom-Shuttles, of which the following is a description sufficiently full, clear, and exact to enable any person skilled in the art or science to which said invention appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a top plan view of a shuttle provided with my improved tension mechanism; Fig. 2, a sectional elevation of the same; Fig. 3, a vertical transverse section taken on line *x x* in Fig. 1, and Fig. 4 a perspective view of the tension-tube detached.

Like letters of reference indicate corresponding parts in the different figures of the drawings.

My invention relates to an adjustable tension for the filling-thread of loom-shuttles; and it consists in certain novel features hereinafter fully set forth and claimed, the object being to produce a simpler, cheaper, and more effective device of this character than is now in ordinary use.

The nature and operation of the improvement will be readily understood by all conversant with such matters from the following explanation.

In the drawings, A represents the body of the shuttle, which is of the ordinary form and construction. The porcelain eye *b* opens laterally into a chamber *d*, connected by a guideway *f* with the bobbin-chamber in the usual manner. The mouth of the chamber *d* is countersunk at *g*, and an annular groove *h* (see Fig. 3) is formed therein.

The tension mechanism D consists of a short metallic tube *i* of less diameter than the chamber *d*. One end *k* thereof is closed, and an annular flange *m* is formed around its mouth adapted to rest on the shoulder *p* of said chamber. Wedge-shaped studs *r* project radially from the flange *m* and are adapted to tightly enter the groove *h* and

lock the tube in the chamber. A vertical V-shaped groove *t* is formed in the chamber-wall in alignment with the guideway *f* to admit the stud *r* to said groove *h*. The flange *m* is provided with openings *v* to receive the points of a tool suitable for rotating the tube. An opening *w* is formed in the tube-wall in position to register with the shuttle-eye *b*.

In the use of my improvement the tube is disposed in the chamber *d*, with its flange *m* resting on the shoulder *p*. Said tube is rotated until its studs *r*, projecting into the annular groove *h*, are out of line with the groove *t* and guideway *f*, locking the tube in said chamber against vertical movement. Lines *z* on the flange *m* and shuttle-body serve to indicate when the tube-opening *w* and eye *b* register. The thread *y* is passed through the way *f* into the mouth of the tube, through its opening *w*, and out through the eye *b*. By rotating the tube so that the thread engages the edge of the opening *w* in passing through the tension thereon may be increased or lessened, as desired. Said tube being less in diameter than the chamber *d*, sufficient space is left for the passage of knots in the thread without breaking it.

Having thus explained my invention, what I claim is—

1. A shuttle-body having a vertical chamber disposed between the eye and bobbin-chamber and provided with an annular groove, in combination with a tube rotatable in said chamber and having studs projecting into said groove, and a thread-opening in its wall adapted to register with said eye, substantially as described.

2. The combination of a shuttle-body provided with a bobbin-chamber, a lateral thread-eye, a vertical chamber at the inner end of said eye connected by a guideway with the bobbin-chamber and provided with a horizontal annular shoulder and groove, and a tube rotatable in said chamber, said tube having a flange engaging said shoulder, a stud projecting into said groove, and a thread-opening adapted to register with said eye, substantially as described.

3. The combination of the shuttle-body A, provided with the chamber *d*, having the shoulder *p* and grooves *h* *t*, the eye *b* opening into said chamber, the tube *i*, rotatable in said chamber and provided with the thread-opening *w*, and flange *m*, having studs *r*, and the guideway *f*, connecting said chamber

with the bobbin-chamber, substantially as described.

WILLIAM LIVINGSTON.

Witnesses:

FRED S. FELLOWES,  
A. S. FRENCH.