No. 725,652. PATENTED APR. 21, 1903.

A. BALDWIN.

TENSION DEVICE FOR LOOM SHUTTLES.

APPLICATION FILED OCT. 17, 1900.

NO MODEL.

Fig. 1.

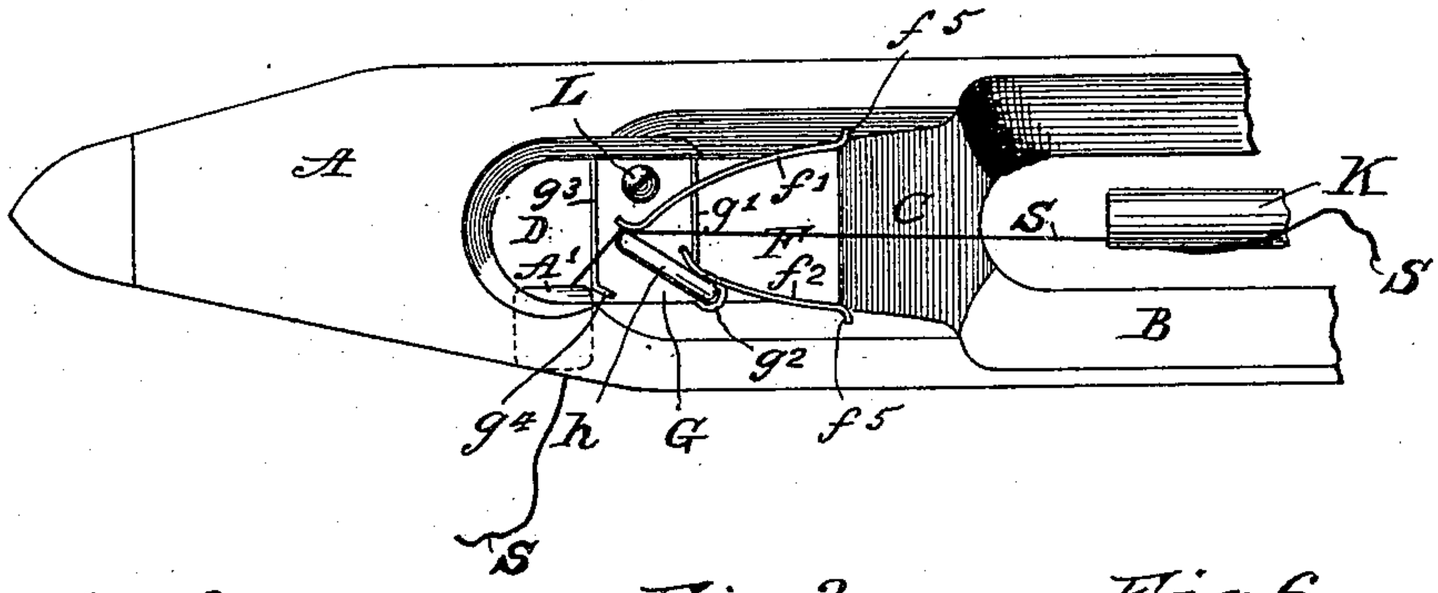


Fig. 2.

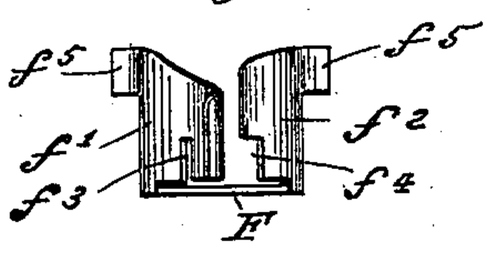


Fig. 3.

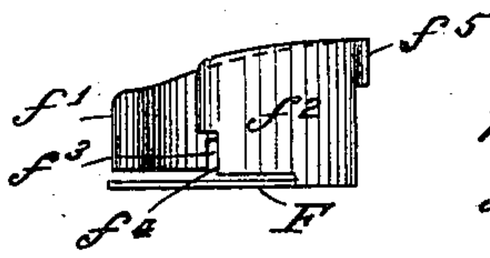


Fig. 6.

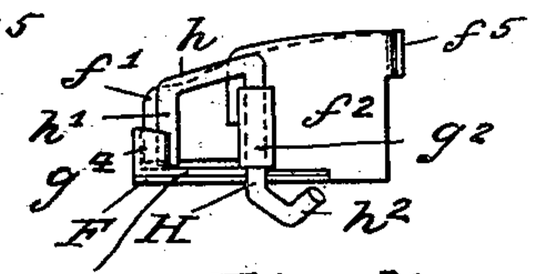


Fig. 4.

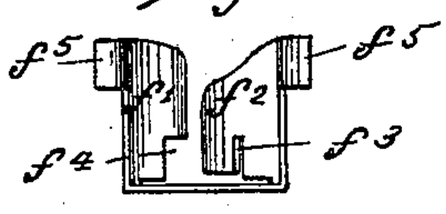


Fig. 5.

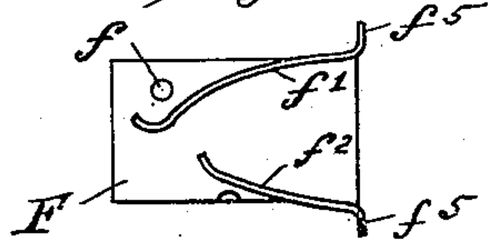


Fig. 7.

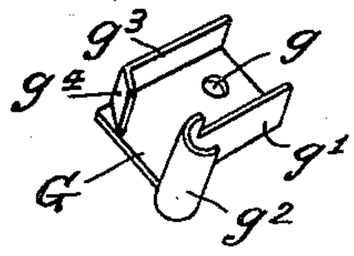


Fig. 8.

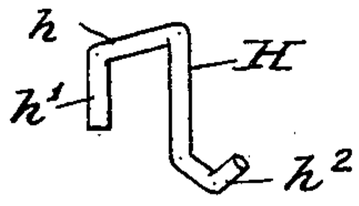


Fig. 9.

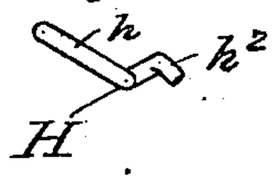
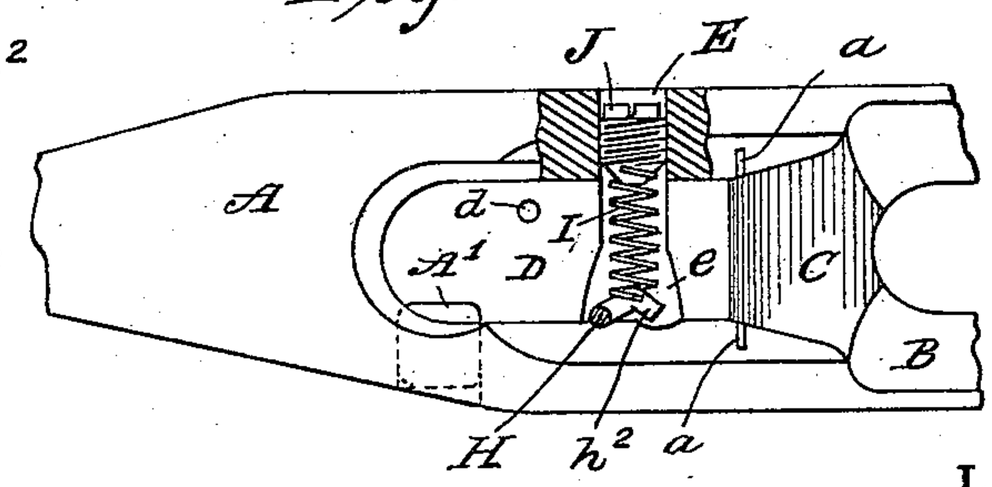


Fig. 10.



Witnesses
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By his Attorney J. B. Thurston

UNITED STATES PATENT OFFICE.

ALFRED BALDWIN, OF GOFFS FALLS, NEW HAMPSHIRE.

TENSION DEVICE FOR LOOM-SHUTTLES.

SPECIFICATION forming part of Letters Patent No. 725,652, dated April 21, 1903.

Application filed October 17, 1900. Serial No. 33,316. (No model.)

To all whom it may concern:

Be it known that I, ALFRED BALDWIN, a citizen of the United States, residing at Goffs Falls, in the county of Hillsborough and State of New Hampshire, have invented certain new and useful Improvements in Tension Devices for Loom-Shuttles; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to automatic spring-tension devices for loom-shuttles, and has for its object the automatic adjustment of the yarn or thread within the tension device at every threading, whether the latter is accomplished by means of a hook or by the common method of sucking the yarn through the eye of the shuttle.

The invention consists in the novel construction and arrangement of the tension device, whereby the desired result is attained, as will be fully set forth in the following specification and claims and clearly illustrated in the drawings accompanying and forming a part of the same, of which—

Figure 1 is a broken elevation of a loom-shuttle to which my improved tension device is applied. Fig. 2 is a detail view showing an end elevation of a cage having inclined side walls forming guides for the yarn or thread. Fig. 3 is a side elevation of the same part. Fig. 4 is an elevation showing the opposite end of the same part. Fig. 5 is a plan view of the same part shown in Figs. 2, 3, and 4. Fig. 6 is a side elevation showing the cage with the tension-lever and stop or bearing plate attached. Fig. 7 is a perspective view of the stop-plate upon which is formed a half-bearing or support for the tension-lever. Figs. 8 and 9 are respectively an elevation and plan view of the tension-lever. Fig. 10 is a sectional plan view of a portion of a loom-shuttle, showing my improved spring-adjusting mechanism for the tension-lever.

Similar reference characters designate corresponding parts in all the views.

A represents a portion of a loom-shuttle; A′, the delivery-eye. B is the bobbin-chamber, and C is an inclined surface leading up to a chamber D, in which is formed a recess *e*, one side of which terminates in a threaded perforation E, as shown in Fig. 10.

Upon the flat surface of the chamber D is placed the cage F of my improved tension device, the said cage being provided with a perforation *f* and having inclined and longitudinally-curved side walls f' f^2. The curved side wall f' constitutes a friction-plate and is the longer of the two. It sustains by its upper edge the yarn being led from the bobbin, and said side wall is provided with a slot f^3 in its lower edge, while the side f^2 has a recess f^4 at a point corresponding with the slot f^3 of the curved plate f'. The upper edge of the side plate f' is inclined, as shown at 2, so that the upper side of the free end 3 of said side plate is lower in a horizontal plane than the upper edge of the tension-lever H, to be described.

G is a retaining-plate having a perforation *g* and flanges g' g^3, which are so located with relation to the tension-lever H, to be described, and the delivery-eye A′ as to stop the yarn or thread between the tension members and prevent it from descending low enough to pass laterally under the end of the leg h' of said tension-lever on its way into the shuttle-eye. The flange g' of the retaining-plate has an attached bearing or support g^2 to sustain loosely one end of the tension-lever, and the flange g^3 has at one of its ends an angular part, as g^4, that serves as a stop to limit the movement of the tension-lever H away from the side wall f' under the strain of the yarn. The tension-lever H is shown as formed of wire, and its top *h* is inclined somewhat to correspond with the inclined top of the side wall f', the top of the tension-lever being, however, located a little above the inclined top of the side wall. The lever has depending from its inclined top a leg h', and the opposite end of said lever terminates in an angular lateral extension h^2, as in Figs. 9 and 10. The extension h^2 drops within the recess *e* of the shuttle-body at a point convenient to enter one end of a helical spring I, which rests within the perforation E, its opposite end bearing against the conical end of an adjusting-screw J, which is threaded to

said perforation, as best seen in Fig. 10. By this arrangement the strength of the spring I may be increased or decreased as the action of the tension-lever may demand. The expansive force of the spring I, acting against the arm h^2 of the tension-lever, tends to press its opposite portion h' against the free end of the side-plate f', and the yarn or thread S as the latter is being led from the bobbin K to and through the ordinary eye A′ of the shuttle A must pass between the part f' and the tension-lever, said lever acting against the yarn and exerting sufficient tension thereon to insure its proper delivery when the bobbin is full of yarn, the increased strain exerted on the yarn in unwinding the same, due to the decreasing yarn mass moving the tension-lever away from the wall f' and thereby reducing the tension, thus making the tension automatic throughout the operation of delivering the yarn from the bobbin. The sloping or inclined top of the side wall f' acts as a guide to direct the yarn into its proper position between said side wall and the tension-lever, so that the thread will be introduced automatically into position to be subjected to the necessary friction without any previous thought or care beyond threading the yarn through the delivery-eye.

A retaining-screw L may be passed through the perforation g of the plate G and the perforation f of the plate F and threaded at d into the shuttle-body A, and the plate F may be additionally fastened by means of the lateral projections f^5, adapted to enter grooves a. (Shown in Fig. 10.)

The plate G (shown in Fig. 7) is cheaply and quickly struck up from sheet metal, and its flanges g' g^3, while serving to hold the yarn or thread (when under tension) at the proper elevation to enter the shuttle-eye on a plane with its center, also prevents the thread from falling upon the plate G and working under or becoming entangled with the lower end h' of the tension-lever, which swings to and fro in close proximity to said plate G.

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

1. In a loom-shuttle tension, means for the automatic adjustment of the yarn or thread within the tension device at every threading, said means comprising converging side walls and a spring-actuated tension-lever, inclined at its top and crossing the narrower part of the space between said walls, said lever being free to be moved toward and from that one of said side walls across which the yarn is drawn.

2. In a tension device for loom-shuttles, means for the automatic adjustment of the yarn or thread within the tension device at every threading of the shuttle, said means comprising a spring-controlled, horizontally-movable, tension-lever having an inclined top portion, and a stationary friction-plate having its face arranged in a vertical plane.

3. In a loom-shuttle tension, means for the automatic adjustment of the yarn or thread within the tension device at each threading, said means comprising a yarn-sustaining side wall having its top inclined for guiding the yarn into the tension device as the shuttle is threaded, and a spring-actuated tension-lever free to be moved toward and from said side wall.

4. In a tension device for loom-shuttles, a yarn-sustaining side wall for guiding the yarn for the tension device as the shuttle is threaded, and a tension-lever adapted to act against the yarn crossing said side-wall, and a plate provided with a bearing to sustain said tension-lever, the tension of the yarn tending to diminish the tension-pressure of the lever against the side wall.

5. In a tension device for loom-shuttles, a yarn-sustaining side wall for guiding the yarn to the tension device as the shuttle is threaded, and a tension-lever adapted to act against the yarn crossing said side wall, a bearing to sustain said tension-lever, and means to arrest and maintain the thread between said side wall and said tension-lever to be subjected to tension, the tension of the yarn tending to diminish the tension-pressure of the lever against the side wall.

6. In a tension device for loom-shuttles, a side wall to sustain the thread being led from the bobbin, a coacting spring-controlled tension-lever normally held in a yielding manner against the thread crossing said side wall, means to sustain said tension-lever that it may be swung by the tension of the yarn in the arc of a circle, and a stop to control the extent of movement of said tension-lever under the action of the strain of the yarn thereon.

7. A loom-shuttle having a delivery-eye, and means to sustain a bobbin carrying yarn, a side wall located between the end of the bobbin and said delivery-eye, a tension-lever pivoted between said delivery-eye and the end of the bobbin and free to be moved in the arc of a circle by the strain of the yarn thereon, as the latter leaves the bobbin.

8. A loom-shuttle having a delivery-eye, and means to sustain a bobbin carrying yarn, a side wall located between the end of the bobbin and said delivery-eye, a tension-lever pivoted between said delivery-eye and the end of the bobbin and free to be moved in the arc of a circle by the strain of the yarn thereon, as the latter leaves the bobbin, and a stop to limit the movement of said tension-lever, due to the strain of the yarn thereon.

9. A loom-shuttle having a yarn-delivery eye in its side wall, combined with a tension device comprising a friction-plate having its acting face next said eye and a tension-lever mounted upon a pivot interposed between

the face of said friction-plate and said eye and sustaining the thread on its way from the bobbin through said eye, excessive strain on said yarn moving the acting end of the friction-plate toward said eye and relieving the yarn from tension between itself and said friction-plate.

10. In a tension device for loom-shuttles, means for the automatic adjustment of the yarn or thread into position within the tension device at every threading of the shuttle, said means comprising a side wall having an inclined edge, and a tension-lever adapted to bear against said side wall.

11. In a tension device for loom-shuttles, means for the automatic adjustment of the yarn or thread within the tension device, said means comprising inclined side walls and a yielding tension-lever having its top inclined.

12. In a tension device for loom-shuttles, a side wall, a tension-lever and means for maintaining the yarn or thread in proper position between the side wall and the tension-lever and in the plane of the shuttle-eye, said means comprising a plate having a flange on either side of the tension device.

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

ALFRED BALDWIN.

Witnesses:
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EMILE H. TARDIVEL.