No. 749,353. PATENTED JAN. 12, 1904.

A. BALDWIN.

LOOM SHUTTLE.

APPLICATION FILED DEC. 30, 1901.

NO MODEL.

Fig. 1.

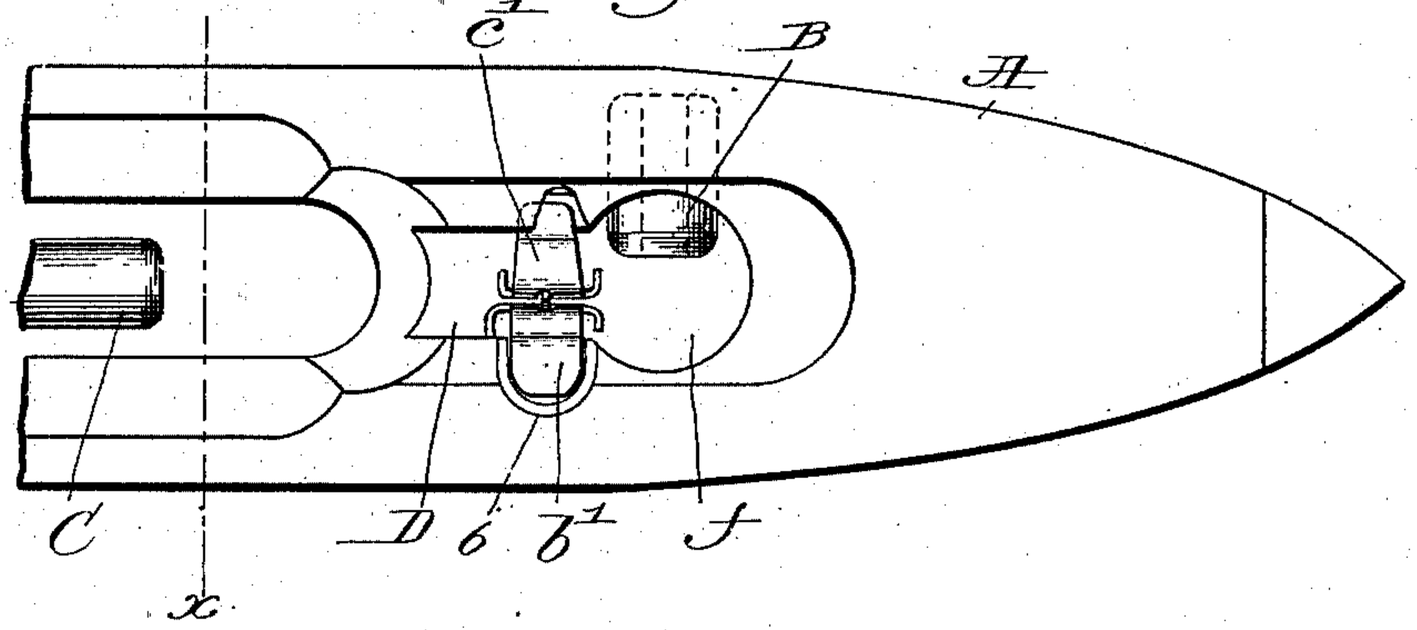


Fig. 2.

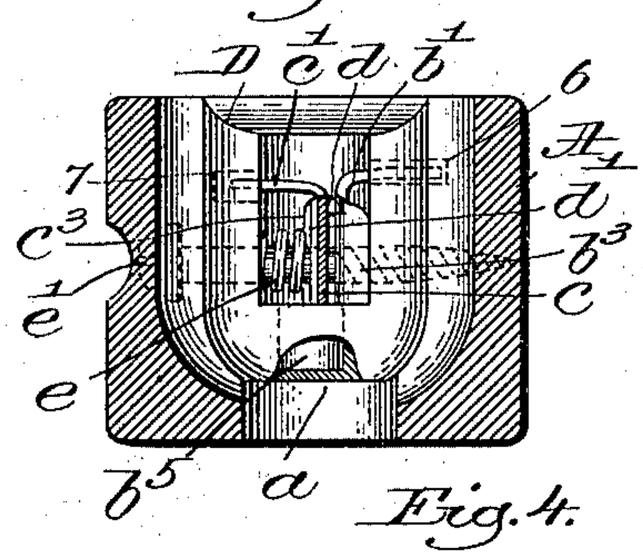


Fig. 3.

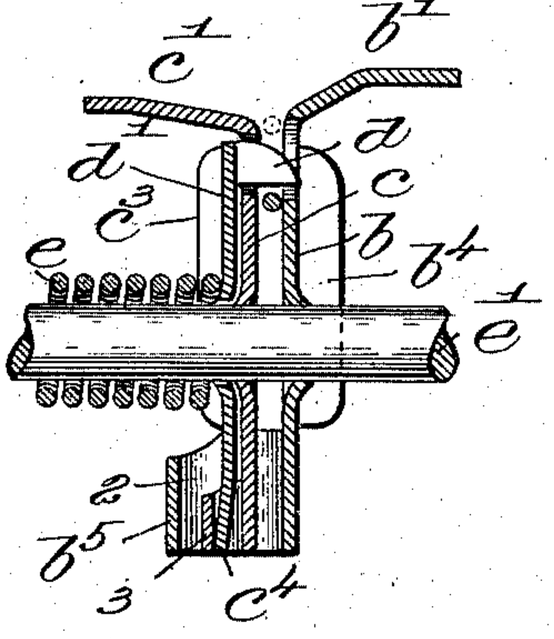


Fig. 4.

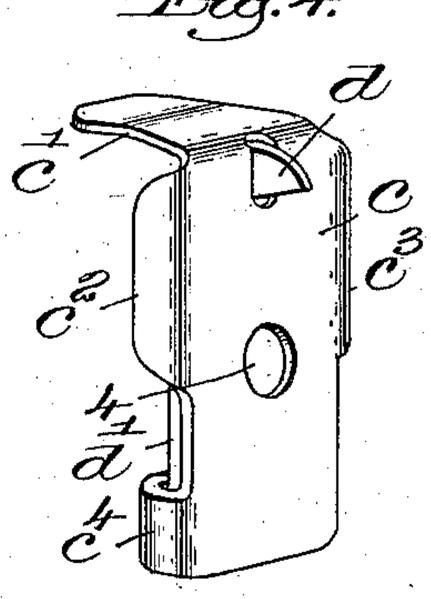
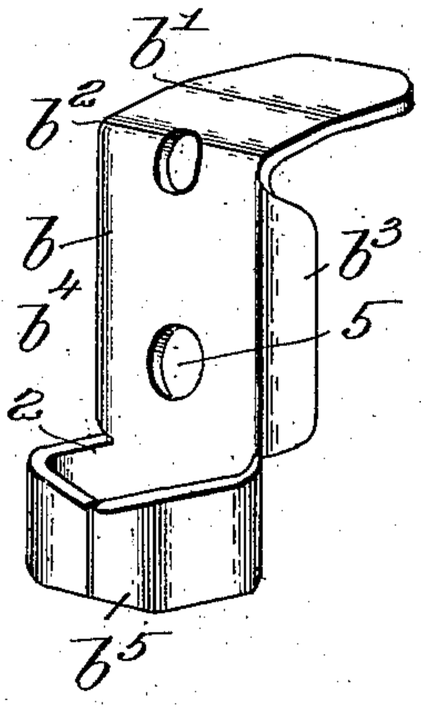


Fig. 5.



Witnesses:
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No. 749,353. Patented January 12, 1904.

UNITED STATES PATENT OFFICE.

ALFRED BALDWIN, OF GOFFS FALLS, NEW HAMPSHIRE.

LOOM-SHUTTLE.

SPECIFICATION forming part of Letters Patent No. 749,353, dated January 12, 1904.

Application filed December 30, 1901. Serial No. 87,693. (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 Hillsboro and State of New Hampshire, have invented an Improvement in Loom-Shuttles, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention in loom-shuttles relates more especially to novel means for regulating the tension on the yarn between the bobbin and the delivery-eye of the shuttle, said means being adapted to permit the thread between its free end and the bobbin to be moved laterally by drawing upon the yarn into position to be subjected to tension, the insertion of the free end of the yarn through a hole in order to subject it to the action of the tension means being obviated.

In accordance with my invention I have produced a tension device which may be inserted readily in the body of any shuttle, and the thread may be automatically drawn laterally between the members of the device, one member of the device being yieldingly sustained that it may be moved bodily away from the friction-plate as the strain on the yarn increases, due to the increasing resistance offered by the yarn in being pulled from the decreasing quantity of thread being drawn from the bobbin.

Figure 1 in plan view shows part of the leading end of a shuttle containing my improvements in one of the best forms now known to me. Fig. 2 is a section in the line x, Fig. 1. Fig. 3, on a larger scale, shows the tension device surrounding the screw that holds it in place. Figs. 4 and 5 show the two members of the tension device, Fig. 3, separated.

This invention relating to tension means is shown as embodied in such manner as to produce what is called "automatic" tension means or a means self-adapting to the requirements of the thread.

As the yarn is unwound from the bobbin in weaving the strain exerted to effect the withdrawal of the yarn from the decreasing diameter of the yarn on the bobbin is gradually increased, and consequently the tension must be loosened when strain is put upon the yarn, and as the strain on the yarn increases the tension-plate is moved bodily away from the face of the friction-plate, thereby lessening instantly the friction on the yarn, but the instant that there is any slack yarn the spring e quickly returns the friction-plate into its operating position to again act upon the yarn with its established friction.

The shuttle-body A, partially shown, its delivery-eye B, and the bobbin C are and may be all of any usual construction. Between the end of the bobbin and the eye B the shuttle-body is chambered, as at D, and the bottom of the chamber is shown as provided with a socket a, that receives one end of the stationary friction-plate b, forming one member of the tension means. Preferably the upper end b' of said plate will be bent outwardly at b^2, and the vertical edges b^3 b^4 of the plate will be inturned to stiffen the same, one of said edges, as b^3, also obviating a square shoulder that would be liable to wear the yarn being drawn across the acting face of the plate. The plate b is shown as struck up from sheet metal, and the end b^5 of the plate entering the socket a may be formed by bending two ears of said plate into the shape shown in Fig. 5; but this invention is not limited to the precise shape of the friction-plate nor to the precise manner shown for connecting said plate stationary with relation to the shuttle-body. The coacting or opposed member of the tension means is a tension-plate c, having preferably its upper end c' bent outwardly, its side edges inturned or flanged, as at c^2 c^3, while the lower end c^4 thereof may be inturned, as at 3, to thereby form smooth or rounded edges that will not catch on the plate b. The side walls of the chamber D are shown as notched to receive the upper ends b' and c' of the plates b and c. The plate c has combined with it a thread-detaining member d in the shape of a projection normally occupying a position to cross the space between the faces of the plates b and c when the latter are pressed one toward the other by a suitable spring e, shown as a spiral spring, surrounding a screw e', inserted transversely of the shuttle, said screw also passing through

suitable holes 4 5 of the plates *b c* and acting to retain said plates in the shuttle and to guide the plate *c* in its movements toward and from the plate *b*. The face of the plate *b* is notched to receive the point of the thread-detaining member *d*. The detaining member *d* (shown in Figs. 1 and 4) is shown as forming part of a plate *d'*, interposed between the back side of the plate *c* and the end of the spring *e*, the projection of said plate *d'* being extended through a slot in the plate *c*.

In operation the end of the yarn coiled or bunched up and laid in the space *f* at the end of the chamber D opposite the delivery-eye may be drawn through said eye either by sucking or by a hook, and as the yarn is then pulled the strain on the yarn will draw the yarn then lying loosely on one or the other of the upper ends *c'* or *b'*, which present surfaces inclined downwardly toward the space between the faces of said plates *b c*, and the yarn enters said space and is thus put automatically into position to be acted upon by the plate to subject the yarn to the degree of tension which it has been determined that the particular yarn to be delivered needs when the bobbin is substantially full. The degree of this tension may be varied by turning the screw *e'*. As the yarn is drawn into position to be subjected to tension it passes below the detaining member, the latter having its upper end suitably beveled or shaped to permit the passage of the yarn below it.

The yarn cannot get under the inclined upper ends of the plates as they enter the recesses 6 and 7, which thus act as shields for said ends.

While I prefer that the upper ends respectively of the tension-plate and the friction-plate should be inclined outwardly to thereby form a large throat in which the yarn may readily enter when subjected to lateral strain, yet I may in some instances omit the outwardly-inclined portions of one or both of these plates. So this invention is not in all instances limited to the employment of said inclined upper ends, nor is the invention limited to the particular length shown for the delivery-eye or the position occupied by the inner end of said eye with relation to the space between the friction-plate and the tension-plate.

The lower end of the tension-plate will enter the socket referred to, the latter acting to retain the tension-plate in its upright or operative position. The screw *e'* also acts as a guide for the tension-plate when being moved in one or the other direction by the thread and by the spring *e*.

I have shown the plate carrying the detaining member as located outside the tension-plate; but it will be understood that the operation would be just the same were the plate c^2 and the detaining member located outside the friction-plate.

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

1. Tension means for loom-shuttles, comprising a friction-plate having a socketed lower end, a vertically-located tension-plate the lower end of which loosely engages said socketed lower end of the friction-plate, and means to press the tension-plate toward the friction-plate and permit the tension-plate to be moved bodily under the strain of the thread.

2. Tension means for loom-shuttles, comprising a friction-plate having a socketed base or lower portion, a tension-plate having an extended lower portion to engage and coact loosely with said socketed base, and a spring to press said tension-plate bodily against the friction-plate.

3. Tension means for loom-shuttles, comprising a friction-plate having its lower end formed into a socket, a tension-plate having an extended lower portion to engage and coact loosely with said socket, an adjusting screw or pin passing through both of said plates, and a spring for forcing one of said plates toward the other.

4. Tension means for loom-shuttles, comprising a friction-plate having rounded side edges and a socketed lower end, a tension-plate also provided with rounded side edges and having its lower end extended to loosely engage the socketed lower end of the friction-plate, and a spring for normally tending to move one of said plates toward the other.

5. Tension means for loom-shuttles, comprising a friction-plate, a tension-plate, said plates having outwardly-extended ends, shields for the said ends formed in the shuttle-body, means for normally forcing said plates toward each other, and a plate independent of the friction and tension plates and provided with a detaining member extending across the space between said friction and tension plates.

6. Tension means for loom-shuttles, comprising a friction-plate and a tension-plate each provided with a perforation, and provided with rounded side edges and a plate independent of the friction-plate and tension-plate and having a detaining member extended through the perforations in said friction and tension plates.

7. Tension means for loom-shuttles, comprising a friction-plate, a tension-plate, means for normally forcing said plates toward each other, and a plate independent of the friction and tension plates and provided with a detaining member extending across the space between said friction and tension plates, and a spring acting on said independent plate normally tending to force the tension and friction plates toward each other.

8. Tension means for a loom-shuttle comprising a friction-plate having a connected socket, a tension-plate, the lower end of which engages said socket, a spring acting normally to press said tension-plate toward the friction-

plate, said spring permitting the plates to be separated under the strain of the thread when excessive.

9. A tension means for loom-shuttles, comprising a friction-plate and a tension-plate, said friction-plate being secured in stationary position in the shuttle-body, a spring for forcing the tension-plate toward the friction-plate, a plate carrying a detaining member, said plate being interposed between the spring and tension plate, and having its end extended below the spring.

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

ALFRED BALDWIN.

Witnesses:
Mrs. ALFRED BALDWIN,
W. E. MCDONALD.