(No Model.)

2 Sheets—Sheet 1.

I. A. HALL.

TENSION DEVICE FOR LOOM SHUTTLES.

No. 531,029. Patented Dec. 18, 1894.

Fig 1

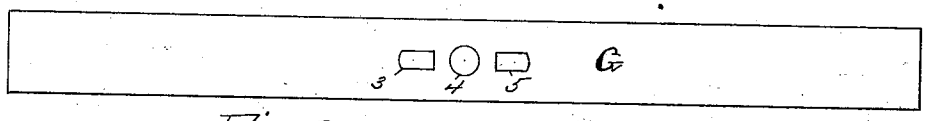


Fig 2

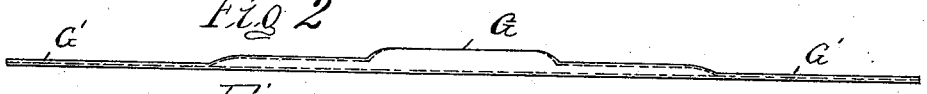


Fig 3

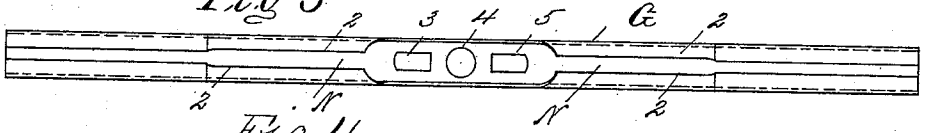


Fig 4

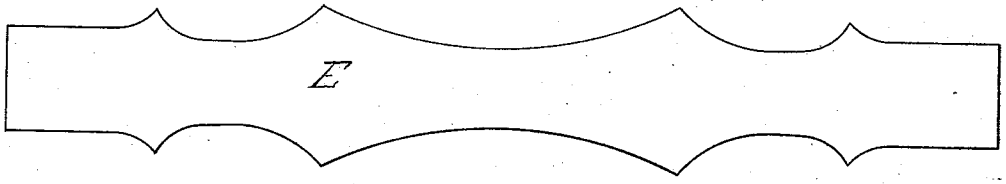


Fig 5

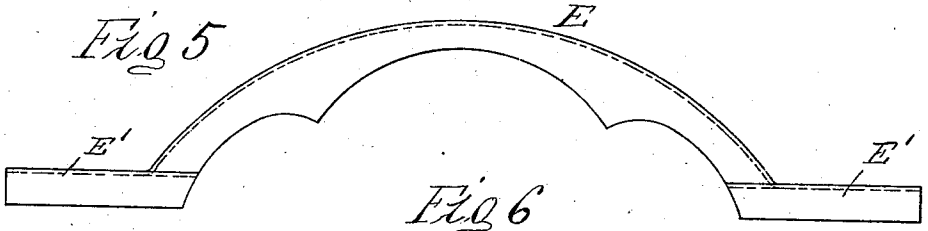


Fig 6

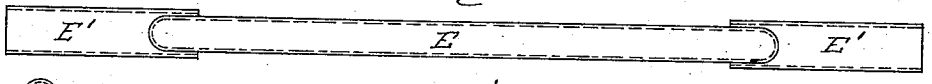


Fig 7

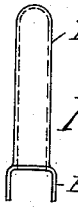


Fig 8

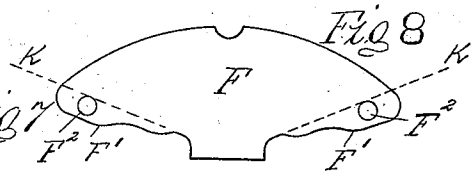


Fig 9

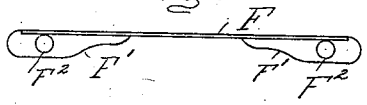


Fig 10

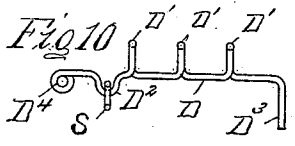
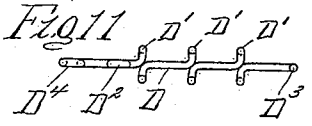


Fig 11



Witnesses

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(No Model.) 2 Sheets—Sheet 2.

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TENSION DEVICE FOR LOOM SHUTTLES.

No. 531,029. Patented Dec. 18, 1894.

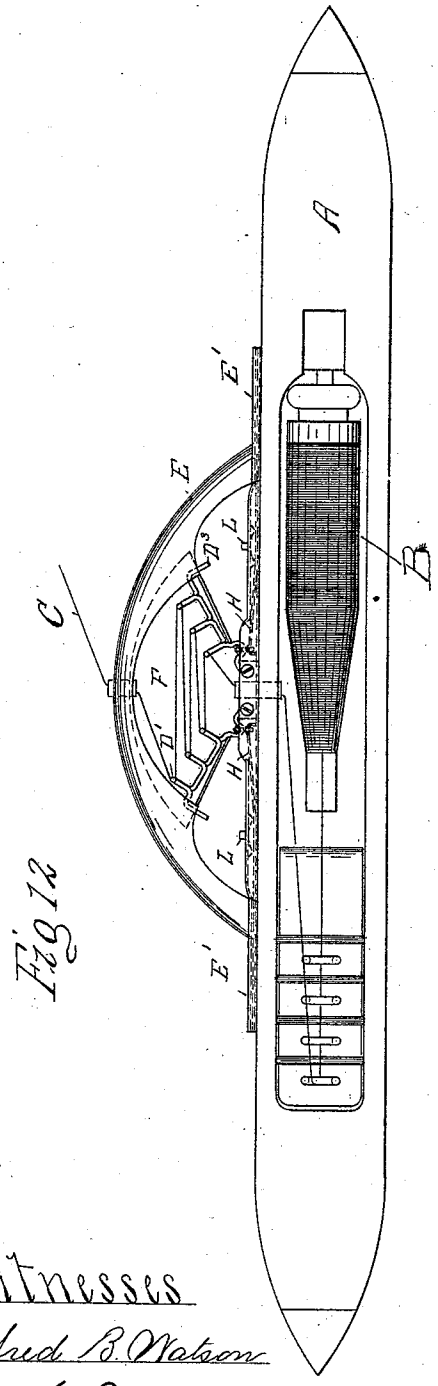

Fig 12

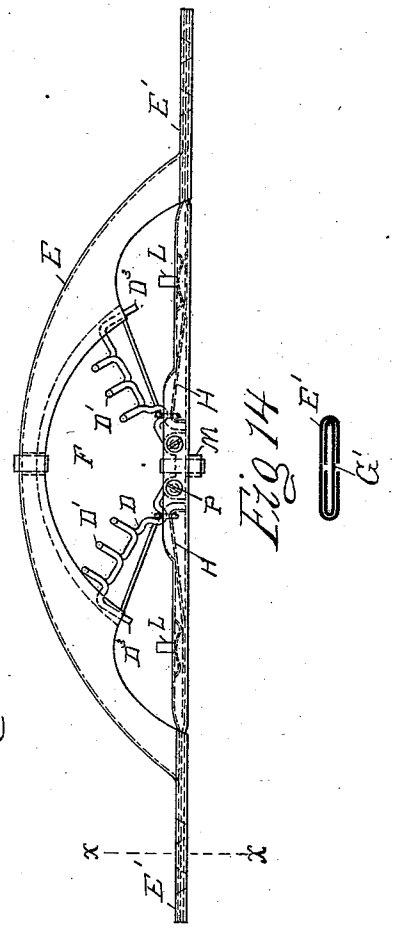

Fig 13

Fig 14

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UNITED STATES PATENT OFFICE.

ISAAC A. HALL, OF PATERSON, NEW JERSEY.

TENSION DEVICE FOR LOOM-SHUTTLES.

SPECIFICATION forming part of Letters Patent No. 531,029, dated December 18, 1894.

Application filed September 10, 1894. Serial No. 522,537. (No model.)

To all whom it may concern:

Be it known that I, ISAAC A. HALL, of the city of Paterson, in the county of Passaic and State of New Jersey, have invented certain new and useful Improvements in Tension Devices for Loom-Shuttles, of which the following is a specification.

The object of my invention is to provide a shuttle bow or guard ring standards of improved construction, and a tension frame also of improved construction, the whole forming a tension device which from simplicity of construction, durability and ease of operation will greatly facilitate the regulation of the tension, in weaving, especially with silk, and insure an equal distribution of thread from the bobbin to the cloth being woven.

My invention consists in certain features of construction and combinations of parts, which will be hereinafter described and claimed, as well as shown in the accompanying drawings which form a part of this specification, and in which similar letters and figures of reference indicate corresponding parts in all the views.

In the drawings, Figure 1, is a view of the base plate as cut from a sheet of metal and before being bent or shaped as shown in Fig. 2. Fig. 2, is a side view of Fig. 1 after being shaped. Fig. 3 is a plan view of Fig. 2. Fig. 4, is a plan view of guard as cut from a sheet of metal and before being shaped as in Fig. 5. Fig. 5, is a side elevation of guard when shaped. Fig. 6, is a top plan view of Fig. 5. Fig. 7, is an end elevation of Fig. 5. Fig. 8, is a side elevation of back plate as cut from a sheet of metal before the edges are turned up on dotted lines. Fig. 9 is a top view of Fig. 8, when flanged on dotted lines shown in Fig. 8. Fig. 10 is a side view of tension fly or ring standard. Fig. 11 is a bottom view of the same. Fig. 12 is a side elevation of my shuttle with bobbin, bow and tension device complete. Fig. 13 is an enlarged side view of my shuttle, bow and tension device. Fig. 14, is a sectional view along the line X X of Fig. 13 showing the reinforcement of the base plate by the bending over of the sides of the extended ends of the bow.

It is obvious, as will be seen from reference to the drawings, that my shuttle bow and tension frame are light, strong and simple in construction, consisting of the base plate shown in Figs. 1, 2 and 3, semi-circular bow or guard shown in Figs. 4, 5, 6 and 7 and the back plate shown in Figs. 8 and 9.

The base plate is bent or shaped as shown in Fig. 3 in order to receive a spring H and to form a race way for a sliding pin L adapted to engage said spring and to regulate the tension thereof as shown in Figs. 12 and 13.

In the drawings —A— is the shuttle; —B— the bobbin.

—C— is the thread.

—D—D— are tension flies; —E— the guard; —F— the back plate of tension frame.

—G— is the base plate.

—H—H— dotted lines in Figs. 12 and 13 represent the springs that are connected with rings —*s*— on the curved portion of the tension flies near their pivotal ends.

The base plate —G— is provided with the openings 3, 4, and 5 and is formed as shown in Figs. 1, 2 and 3, the edges —2— being turned over so as to receive the spring —H— and the sliding pin —L— which is adapted to move up and down the race way formed by the over turned edges of the base plate —G— to regulate the tension of the spring —H—.

The extended ends —E′— of the guard —E— fit over the ends of the base plate —G— around which they are bent as shown in Fig. 14 making a neat, simple and strong connection without solders, screw or any other means.

The back plate —F— is provided with the flanges —F′— which are formed by the turning up of the edges on the dotted line K K in Fig. 8 and as shown in Fig. 9, said flanges are also provided with the openings —F^2— as shown in said figures.

The tension flies —D— are provided with the rings —D′— and the curved portion —D^2—, the free ends being bent in an opposite direction from the rings and forming the hook end —D^3— which, when the fly is in position and in operation, is adapted to pass in and out of the opening —F^2— in the flange —F′— of the back plate —F—. The flange —F′— serves as a support for the tension fly when not in operation. The back plate —F— may be secured to the upper central portion of the guard and to the middle of the base plate by pins or other suitable means.

Through the opening 4 in the base plate

—G— passes the ordinary eye for conducting the thread from the bobbin and through the alternate rings on the tension flies —D—. Around said eye is placed a hinge block adapted to receive the pivotal ends of the flies —D—. The flies —D— are bent at the pivotal ends forming an eye, and are secured to said block by means of pivot or screw pins which pass through the sides of the base plate —G—, through said block and the eyes on the ends of the flies —D—, as shown in Figs. 12 and 13.

The tension flies or ring standards are each made from a single steel wire which is bent in such a way as to form any desired number or rings standing at right angles to the central single stem, one end of said stem being bent to form an eye, by means of which it is pivotally secured to the hinge block —M—. The other end of the fly is turned over at the top forming a hook end —D^3— to prevent the silk being caught by the end of the fly. These flies are tinned all over after the bending and forming in order that no joints may be left open that would catch the silk while passing through the loops. Near the pivoted end of the fly is formed a loop —D^2— as shown in Fig. 10. Said loop —D^2— is connected with the flat spring —H— by means of the ring —*s*—. These springs —H— regulate the speed of the flies in dropping to their normal position of rest when the thread is slackened and likewise regulate the tension on the thread when passing from the bobbin and through the fly. The tension of the springs is made strong or light by moving the sliding spring pins L backward or forward in the race-way —N— of the base plate —G—.

One end of the flat spring is slightly curled so as to catch and hold the ring —*s*—. The other end of the flat spring is secured in any appropriate manner to the base-plate —G—. I secure it by merely passing the end of the spring through an opening in the bottom of the base-plate —G—.

With this description of my invention, what I claim is—

The combination with a shuttle body, of the guard having a circular portion and extended ends, said portion and ends being made of one piece of metal, the base plate —G— also made of one piece of metal and having its longitudinal edges bent upward and over so as to form a raceway or receptacle, the extended ends of the guard being adapted to surround and reinforce the ends of the base plate, a back piece —F— secured at top and bottom to said guard and base-plate and provided with flanges F′ and openings F^2, flies D pivoted within the guard, the rings —*s*— on said flies, springs carried in said raceway or receptacle, and bearing on said rings —*s*—, and the sliding pin L movable in said raceway and bearing upon said spring, substantially as shown and described.

ISAAC A. HALL.

Witnesses:
EMMET O'BRIEN,
WM. M. DREW.