

(No Model.)

W. A. GRANT.  
TENSION DEVICE FOR LOOM SHUTTLES.

No. 551,628.

Patented Dec. 17, 1895.

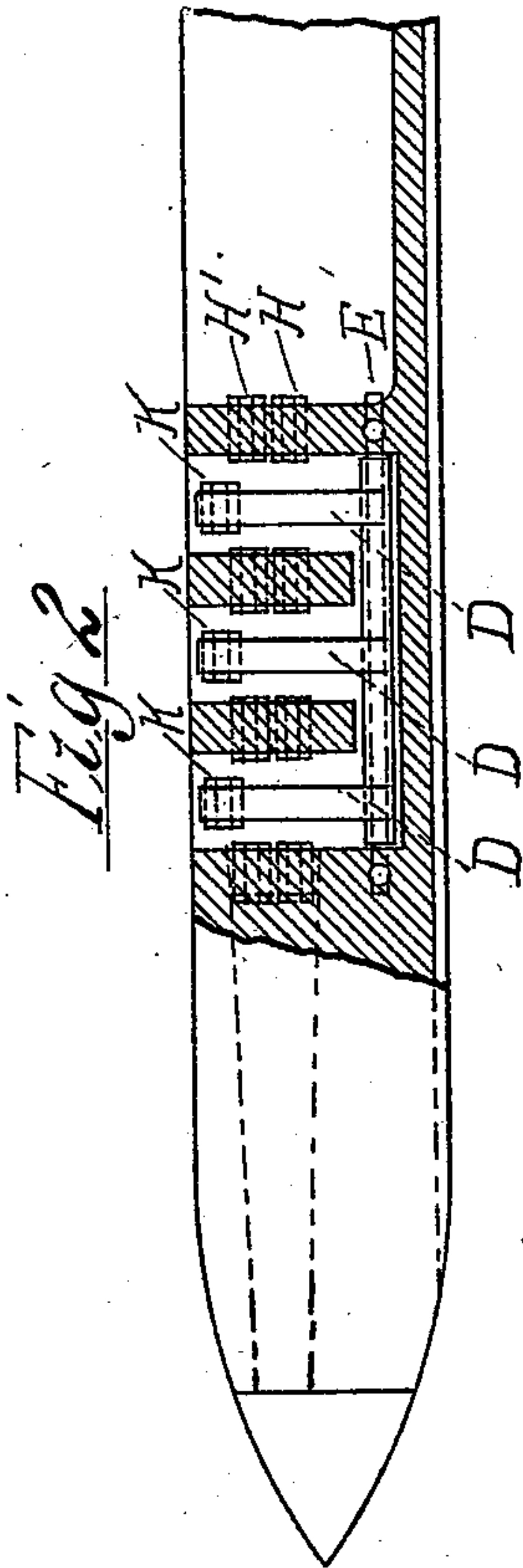
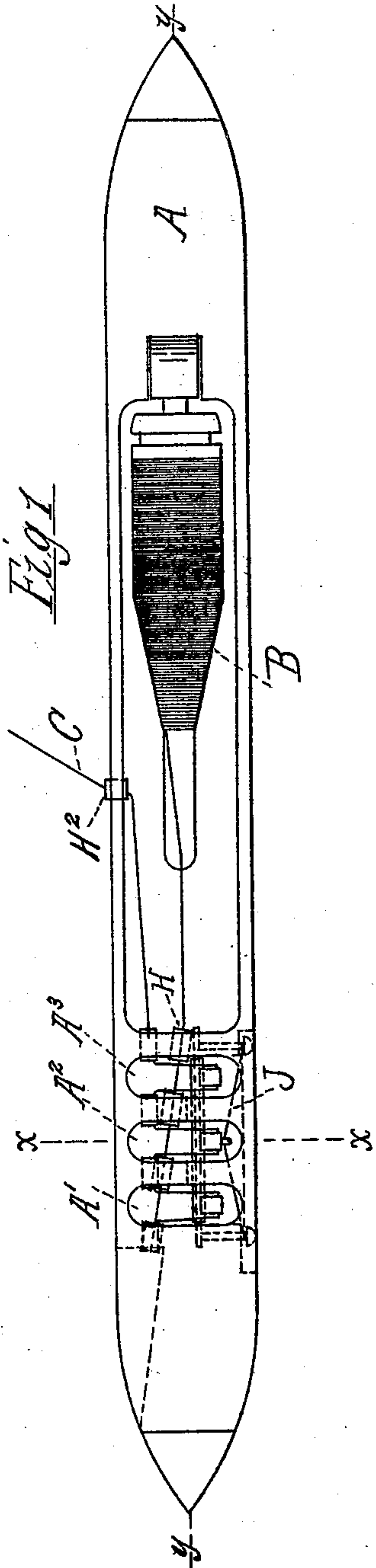


Fig. 3

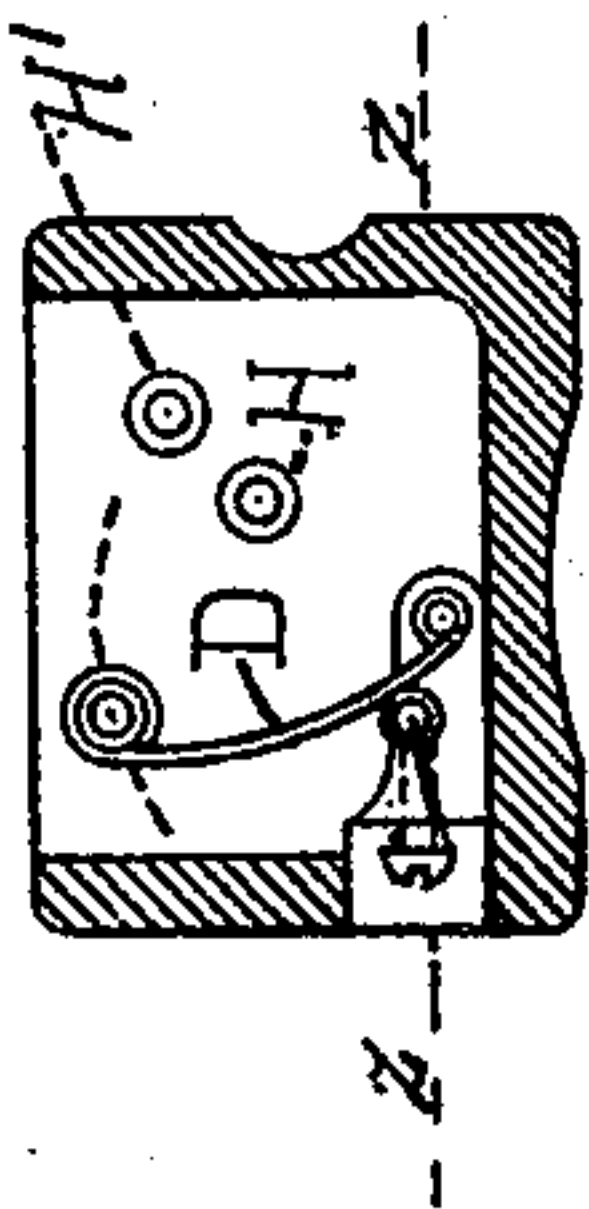
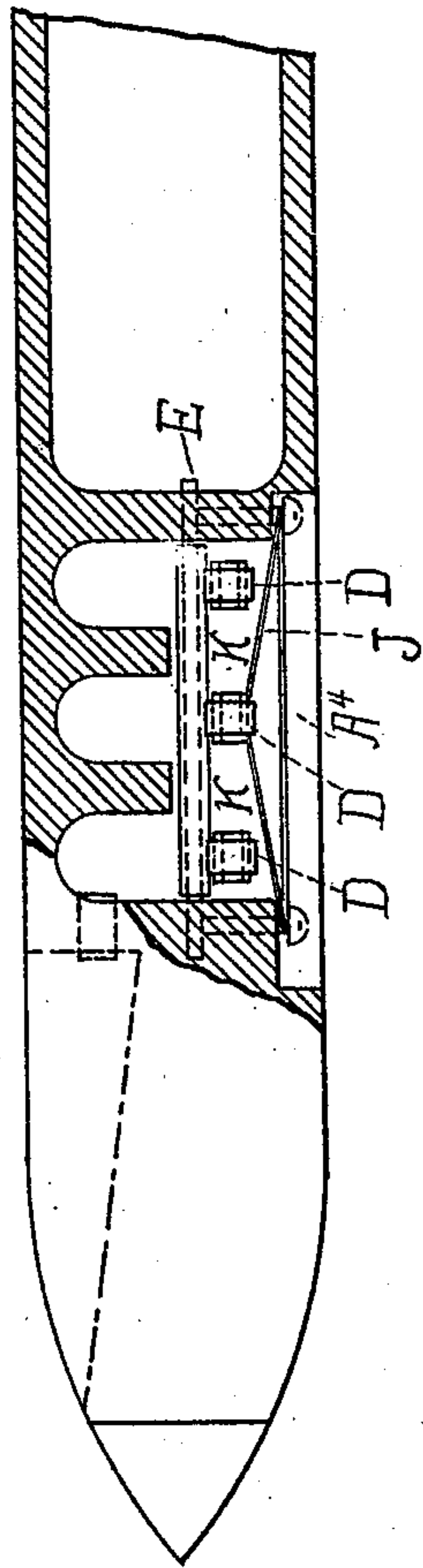


Fig. 4



Witnesses

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# UNITED STATES PATENT OFFICE.

WILLIAM A. GRANT, OF PATERSON, NEW JERSEY.

## TENSION DEVICE FOR LOOM-SHUTTLES.

SPECIFICATION forming part of Letters Patent No. 551,628, dated December 17, 1895.

Application filed December 11, 1894. Serial No. 531,443. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM A. GRANT, 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 tension device for loom-shuttles, which from its simplicity of construction, durability, and ease of operation will greatly facilitate the regulation of the tension of the thread in weaving.

My invention consists of certain features of construction and a combination of parts which will be hereinafter described and claimed and which are shown in the accompanying drawings, forming a part of this specification.

In the different figures of the drawings similar letters of reference indicate corresponding parts.

Figure 1 is a top view of a shuttle with my improved tension device secured therein. Fig. 2 is a part side sectional view through the line Y Y of Fig. 1. Fig. 3 is a part end sectional view through the line X X of Fig. 1, and Fig. 4 is a part sectional plan view on the line Z Z of Fig. 3.

In Figs. 1, 2, and 3 dotted lines extending from end of shuttle to the wall of compartment A' indicate that a piece of the shuttle is cut out in order to expose the upper end eye H' and lower end eye H to enable the thread to be passed from the lower series of eyes to the upper series.

This invention relates particularly to that class of tension devices in which the device is located in recesses provided within the shuttle.

That there are many devices located within a shuttle for the purpose of producing the required tension I am fully aware; but this invention consists in the novel construction and arrangement of the various parts of the device as follows:

In the drawings, A represents a shuttle, which is provided with the perpendicular recesses or compartments A' A<sup>2</sup> A<sup>3</sup> and the horizontal recess or compartment A<sup>4</sup> into which the other compartments open. B represents the spool or bobbin containing the silk or thread C. A long pin E is secured in the bot-

tom of the compartment A<sup>4</sup>. To the pin E are secured arms, such as D D D, which are adapted to move or swing in the compartments A' A<sup>2</sup> A<sup>3</sup> into which they extend. The swinging ends of said arms D D D are provided with the eyes K K K. The arms D D D are slightly curved, as shown in Fig. 3, in order that each arm D when pressed forward will bring the eye K in direct alignment with an upper series of eyes H' H' H' H' located in the walls of the perpendicular compartments in order that the thread or silk or other material may be passed or drawn alternately through the eyes H' and the eyes K in the ends of the arms D after having been passed through a series of eyes located beneath the upper series of eyes. The silk C first passes from the bobbin B and is conducted through the lower series of eyes H H H H and out of the end of the bobbin or near the end of the bobbin through an opening indicated by the dotted line in Figs. 1, 2, and 4. The swinging arms D D D are then pressed forward until the eyes K in the ends of the arms D D D are in line with the upper series of eyes H' H' H' H'. The thread is then conducted by means of a hook or needle up to and through the upper eyes H' H' H' H' and the eyes K K K in the ends of the arms D D D and through the eyes H<sup>2</sup>, as shown in Fig. 1.

The relative position of the upper and lower series of eyes is shown in Figs. 1, 2, and 3.

The arms D D D are held in the position shown in Fig. 3 by means of an elastic or rubber band, which is secured to the said arms in any suitable manner and to the shuttle, so as to give the required tension.

As the shuttle performs its functions in weaving, the thread C is drawn from the bobbin B, passing through the lower series of eyes H H H H up to the upper end eye H' and then alternately through the said upper eyes and the eyes K K K and out of the eye H<sup>2</sup>, as shown in Fig. 1. As the thread C is drawn through the eye H<sup>2</sup> the arms D D D are drawn forward, so as to turn on or with the pin E, and when the shuttle is about to return the elastic or rubber band secured to the shuttle and to the swinging arms D D D, as shown in Figs. 3 and 4, causes the swinging arms to return to the position shown in Fig. 1, thus taking up the slack thread.

The elastic or rubber band may be varied



in size or thickness, so as to provide various degrees of tension.

A tension device thus constructed and arranged will insure an equal distribution of thread from the bobbin to the cloth being woven and may be regulated by using rubber bands of various sizes or thicknesses to such a nicety as to prevent defects in the cloth by reason of slack threads.

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

The combination with a shuttle body having the perpendicular recesses or compartments —A'—A<sup>2</sup>—A<sup>3</sup>—, the horizontal compartment —A<sup>4</sup>— formed therein, the perpendicular compartments opening into said horizontal compartment, the lower series of eyes —H—H—H—H— located in the lower central portion of the partitions which separate the perpendicular compartments and adapted to receive the silk as it comes from

the bobbin or spool; and the upper series of eyes —H'—H'—H'—H'— located above the lower series and to which the silk is passed from the lower series, of the long pin —E— secured in the bottom of the compartment —A<sup>4</sup>—, two or more connected swinging arms attached to said pin —E— and adapted to move or swing in the perpendicular compartments, each swinging arm being provided at its swinging end with an eye —K—, the eyes —K— of the swinging arms adapted to swing into and out of alignment with the upper series of eyes —H'—H'—H'—H'—, and an elastic band connecting the lower parts of said swinging arms with the shuttle body for the purposes specified and constructed substantially as shown and described.

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Witnesses:

M. DOYLE,

WM. M. DREW.