J. A. CLAUS.

LOOM SHUTTLE.

APPLICATION FILED JUNE 14, 1911.

1,031,690. Patented July 9, 1912.

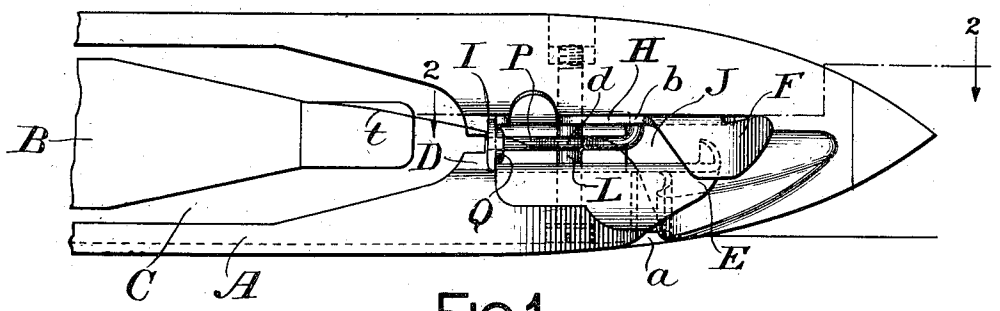

FIG. 1.

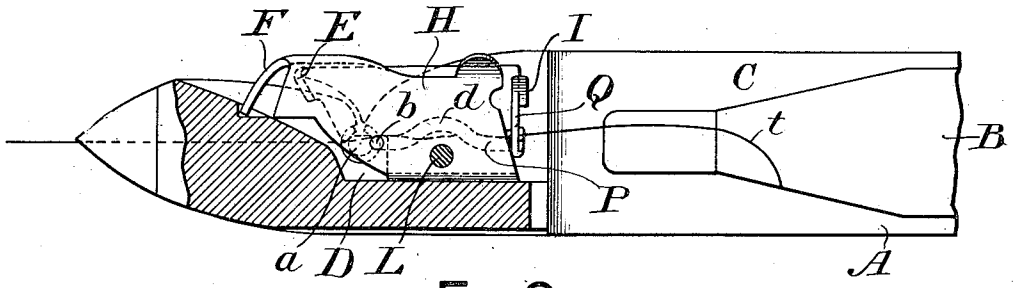

FIG. 2.

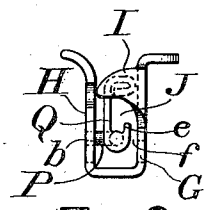

FIG. 3.

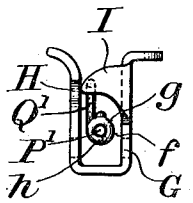

FIG. 4.

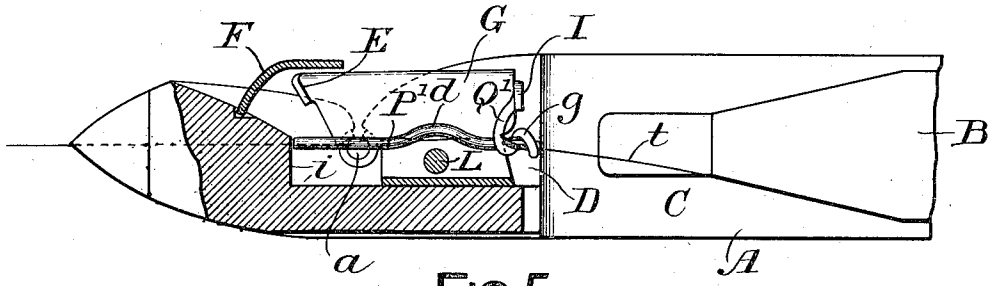

FIG. 5.

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UNITED STATES PATENT OFFICE.

JOSEPH A. CLAUS, OF LOWELL, MASSACHUSETTS, ASSIGNOR TO DRAPER COMPANY, OF HOPEDALE, MASSACHUSETTS, A CORPORATION OF MAINE.

LOOM-SHUTTLE.

1,031,690. Specification of Letters Patent. Patented July 9, 1912.

Application filed June 14, 1911. Serial No. 633,044.

To all whom it may concern:

Be it known that I, JOSEPH A. CLAUS, of Lowell, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Loom-Shuttles, of which the following is a specification.

The present invention consists in a tension device for a loom shuttle which is particularly adapted for automatic weft-replenishing looms and the purpose of the invention is not only to impart a uniform tension to the weft-thread but also to aid in preventing the unthreading of the shuttle.

The present improved tension is illustrated in the accompanying drawings in connection with the automatically threading devices illustrated in United States Letters Patent of Edward S. Stimpson No. 933,497, September 7, 1909, modified only to the extent necessary for the incorporation of the new improvements.

In the drawings:—Figure 1, is a plan view of the eye-end of the shuttle. Fig. 2, is a longitudinal vertical section in the plane indicated by the line 2—2 in Fig. 1. Fig. 3, is a rear view of the threading device with the tension device applied thereto. Fig. 4, is a view similar to Fig. 3, illustrating a modified form of the tension device. Fig. 5, is a central longitudinal vertical section of the shuttle equipped with the modified tension shown in Fig. 4.

The shuttle A, is illustrated with a bobbin B, located in the weft-chamber C. A threading channel D, communicates with the weft-chamber C, and extends forward toward the tip of the shuttle. Within this channel is located a sheet metal threading device of the character shown in said Stimpson Patent No. 933,497, the salient features of which are the horn E, beneath which the thread is drawn on its way to the shuttle side-eye *a;* the overlying guard or beak F, which prevents the rising and escape of the freshly laid weft thread; and the side walls G, and H, of the sheet metal threading device, the wall G, being at the eye-side of the channel D, and the wall H, being at the opposite side of said channel. The threading device likewise has a thread guard I, at its end nearest the weft-chamber C. The space J, between the side walls G, and H, and beneath the thread guard I, constitutes the thread passage through which the thread extends in its course from the bobbin B, to the slotted delivery side-eye *a*. The threading device is secured in place in the usual manner by a transverse bolt L. In all of these described respects the threading device is substantially like that of the said Stimpson Patent No. 933,497. On reference, however, to that patent it will be noted that the rear upturned guide 3, is omitted, being unnecessary in the present construction, which does not employ the tension pad *p*, of that patent.

In accordance with the present invention the tension device consists of a metal tension bar P, which extends lengthwise and centrally in the thread passage J, of the threading device. In the construction shown in Figs. 1, 2 and 3, the rear end of this tension bar is fastened to a metal support Q, which in turn depends from and is secured to the rear thread guard I. At its front end the tension bar turns laterally away from the slotted side-eye and is fastened at *b*, to the side-wall H, of the threading device. The tension bar is arched at its middle, as shown at *d*. This arch has the mechanical office of avoiding the attaching bolt L, and likewise aids in properly directing the thread from the bobbin to the slotted side-eye. The support Q at its lower end is provided with an upturned thread hook *e* which is close to the side wall G, affording a narrow thread throat *f*. The body of the support Q, is close to the wall H, so that a narrow throat is there provided for the initial entrance of the thread.

When a fresh bobbin is inserted into the shuttle (in the manner customary in the Northrop loom, as disclosed, for example, in United States Letters Patent of James H. Northrop, No. 529,940, November 27, 1894), the thread is drawn under the rear thread guard I, beneath the overhanging beak F, underneath the horn E, and thence to the slotted delivery side-eye *a*. Owing to the rotary movement of the thread as it is drawn from the bobbin, the thread passes downwardly through the narrow throat between the hanger Q, and the wall H, and thence upwardly through the narrow throat *f*, between the hook *e*, and the wall G, and accordingly the thread winds around the thread bar in the manner illustrated in Figs. 1 and 2. The thread passes between the hook *e*, and the hanger Q, over the bar P;

thence under the bar in the space furnished by the arch *d*, and thence over the bar forward of the arch *d*, and thence laterally to and through the delivery side-eye *a*, drawing against the under thread-directing edge of the wall G. The arch *d*, insures the maintenance of the thread forward of it, so that the thread is drawn laterally from the bar to the side-eye. The upper edge of the bar forward of the arch *d*, is above the level of the bottom of the thread-eye and above the thread-guiding edge of the side wall G, so that the thread draws frictionally against said edge in passing from the bar to the side-eye. It will be seen from Fig. 1, that the front thread-directing edge of the side wall G, extends below the slotted side-eye *a*, so that the thread must drag thereon in passing from the tension bar to the slotted side-eye. This construction not only furnishes adequate and uniform tension to the thread by the employment of durable metallic tension devices; but also the tension bar and its support, as related to the threading device, materially aid in preventing the accidental unthreading of the shuttle. Accordingly, the improved tension devices are especially applicable to shuttles employing a slotted delivery eye and particularly to such automatically threading shuttles as are used in the Northrop loom.

In the modified construction shown in Figs. 4 and 5 the following differences appear: The support Q′, for the tension bar P′, is itself constructed at its lower end as a spiral or scroll *g*, and the point or hook *h*, of the scroll is at the lowest point thereof. The rear end of the tension post is surrounded by the convolutions of the scroll and is soldered or otherwise fixed thereto. This affords a sufficient attachment for the tension bar, so that it requires no attachment at its front end. Accordingly, the tension bar extends forward centrally through the thread passage and terminates just back of the front wall *i*, of the thread passage. Owing to the scroll surrounding the rear end of the tension bar the thread is given ample tension without rendering it important that the thread should drag against the side wall G, on its way from the tension bar to the slotted side-eye. Accordingly, as shown in Fig. 5, the side wall G, is intermitted or cut away opposite the lower portion of the side-eye with the result that there is no substantial drag of the thread against said side wall. In this construction also a narrow throat *f*, is formed between the hooked end of the support Q′ and the wall G.

I claim—

1. A loom shuttle having the following characteristics, namely, a channel forward of the weft-chamber; a slotted delivery eye in one wall of said channel; a sheet metal automatically threading device located in said channel which directs the thread from the weft-carrier to the slotted delivery eye, said threading device having a longitudinally extending thread passage; a tension bar extending centrally and lengthwise of said passage and having an upward arch at its middle, the upper side of said tension bar being above the bottom of the slotted delivery eye and above the edge of the wall of the threading device adjacent to said delivery eye; and a support for the rear end of said tension bar located at the rear of said thread passage and between the opposite side walls thereof, said support having an upturned hook at the delivery eye side of said thread passage, said support and its hook, in connection with the adjacent side walls of the thread passage, affording narrow throats for the initial entrance of the thread.

2. A loom shuttle having, in combination, a channel forward of the weft-chamber and a slotted delivery eye in one wall of said channel; a sheet metal automatically threading device located in said channel which directs the thread from the weft-carrier to the slotted delivery eye, said threading device having a longitudinally extending thread passage; a tension bar extending centrally and lengthwise of said passage, the upper side of said tension bar being above the bottom of the slotted side delivery eye and above the edge of the wall of the threading device adjacent to said delivery eye; and a support for the rear end of said tension bar located at the rear of said thread passage and between the opposite side walls thereof, said support having an upturned hook at the delivery eye side of said thread passage.

3. A shuttle having, in combination, a slotted delivery eye; a longitudinally extending thread passage leading to said eye; a tension bar extending lengthwise of said channel and having an upward arch at its middle; and a hooked support for the rear end of said tension bar located at the rear of said thread passage and between the opposite walls thereof, said support and its hooked end, in connection with the adjacent side walls of the thread passage, affording narrow throats for the initial entrance of the thread.

In witness whereof, I have hereunto signed my name in the presence of two subscribing witnesses.

JOSEPH A. CLAUS.

Witnesses:

WILLIAM A. ARNOLD,

EVAN J. DAVID.