No. 898,102. PATENTED SEPT. 8, 1908.

J. E. HAUVETTE.

TENSION DEVICE FOR LOOM SHUTTLES.

APPLICATION FILED FEB. 26, 1907.

2 SHEETS—SHEET 1.

Fig. 4

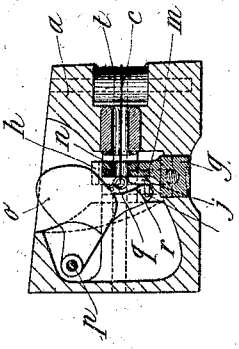


Fig. 5

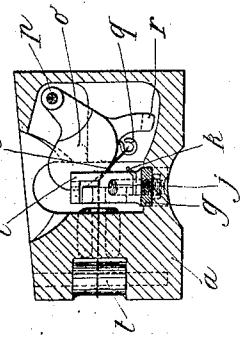


Fig. 1

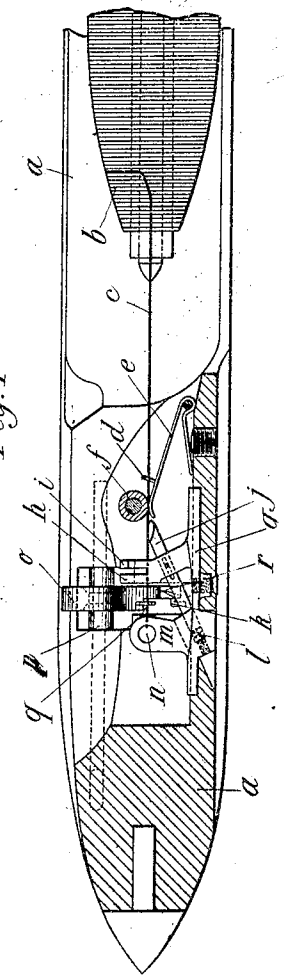
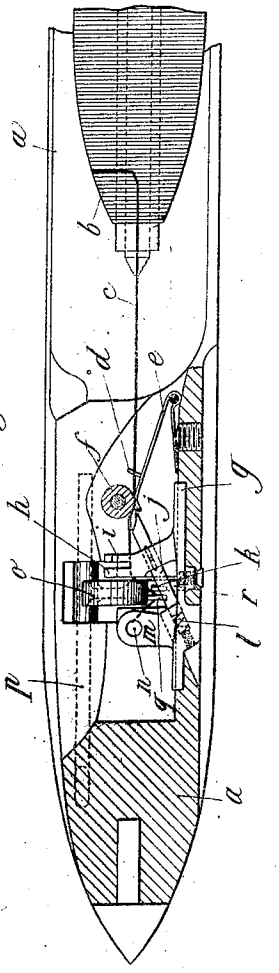


Fig. 2



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2 SHEETS—SHEET 2.

Fig. 6

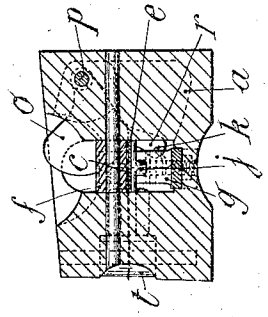


Fig. 9

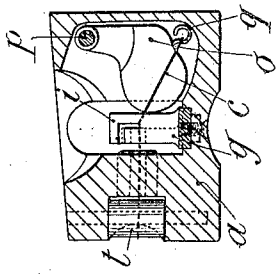


Fig. 3

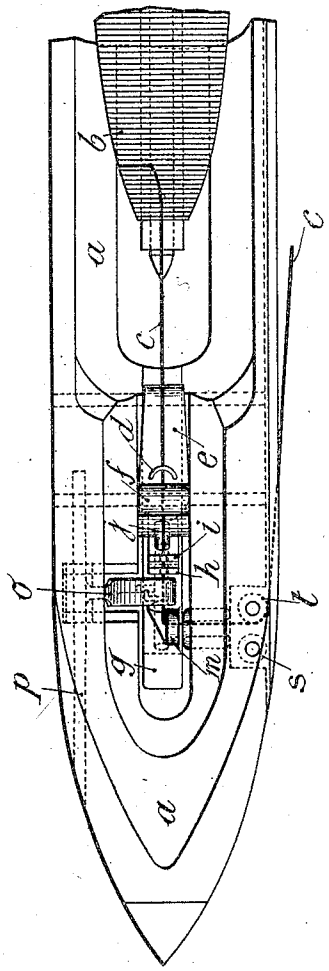


Fig. 7

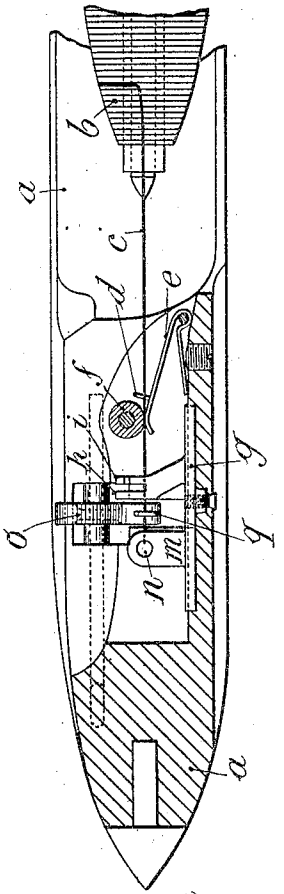
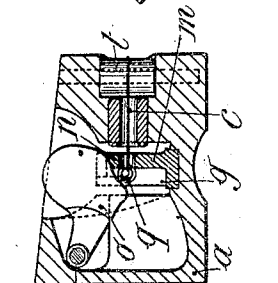


Fig. 8



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Brown & Lemmon

UNITED STATES PATENT OFFICE.

JULES EUGÈNE HAUVETTE, OF CLERMONT-FERRAND, FRANCE.

TENSION DEVICE FOR LOOM-SHUTTLES.

No. 898,102. Specification of Letters Patent. Patented Sept. 8, 1908.

Application filed February 26, 1907. Serial No. 359,494.

To all whom it may concern:

Be it known that I, JULES EUGÈNE HAUVETTE, citizen of the Republic of France, and resident of Rue du Nord, Clermont-Ferrand, Puy-de-Dôme, in the said Republic, have invented a new and useful Tension Device for Loom-Shuttles, of which the following is a specification.

This invention relates to a shuttle with automatic regulator for giving out and putting tension on the weft thread. This automatic regulator insures a regular delivery of the threads and also a constant tension; it prevents the said thread from kinking on leaving the bobbin, and consequently it improves the quality of the finished fabric. The proper action of this regulator is itself insured by means of a special device which serves to regulate the passing out of the thread. For this purpose the weft thread which unwinds from the bobbin pivots around a point of the axis and issues from the shuttle between two side rollers; it therefore works in the same conditions irrespectively of the direction of travel of the shuttle and it thus exerts upon the regulator an action which is always uniform (except as regards tension).

The regulator consists of a counter-weight capable of oscillating in a plane at right angles to the longitudinal axis of the shuttle and provided with an eye through which the weft thread passes. The tension of the latter in normal conditions maintains the counterweight in a raised position, but as soon as the thread becomes slack, the counterweight drops and its eye by moving the thread out of its normal position, stretches it afresh. At the very commencement of the slackness, the delivery of the movable bobbin may likewise be stopped with advantage by means of a stop which tightens the thread against a guide roller.

Figure 1 of the accompanying drawing is a longitudinal section of the forward part of the shuttle embodying the invention, showing the regulator in its normal position of tension. Fig. 2 is a similar longitudinal section, but showing the weft thread slack, and the regulator in the corresponding position. Fig. 3 is a plan and shows the issue of the weft thread. Figs. 4 and 5 are two cross sections of the regulator, showing the latter respectively during the normal delivery of the weft thread, and during the slackness. Fig. 6 is a cross section taken along the axis of the guide roller and showing the position of the stop during the normal delivery of the thread. Fig. 7 is a longitudinal section of a simplified practical form of the invention. Figs. 8 and 9 are two cross sections similar to Figs. 4 and 5, and show the position of the counterweight of the regulator, respectively in the position of tension of the thread, and in its slack position.

The shuttle in Figs. 1 to 5 consists of an ordinary wooden shuttle body *a* in the internal chamber of which there is arranged a bobbin *b* carrying the weft thread. On leaving this bobbin the thread *c* passes through the eye *d* of an ordinary small plate *e*. This eye serves as a guide for the thread and keeps it applied with slight pressure against a roller *f* (see Fig. 6).

On the body *a* of the shuttle there is fixed a part *g* provided with lugs *h* and *i* through which the thread of the bobbin passes. By their form they prevent the thread from kinking and consequently aid in improving the quality of the fabric. On the part *g* is mounted a stop *j* carrying a small tappet *k*; it is urged towards the center by a spring *l*. In front of the lugs *h* and *i* on the part *g*, there is further provided a lug *m* provided with a central eye *n* in which the thread *c* changes its direction before issuing from the shuttle.

The regulating apparatus consists more particularly of a counterweight *o* oscillating about an upper longitudinal axle *p* in such a manner that the impact of the shuttle on entering the shuttle box, shall have no effect upon the movements of this counterweight and shall allow it to act constantly under the same conditions as regulator. The counterweight *o* carries on one hand a small lower eye *q* through which the weft thread *c* passes, and on the other hand a small finger *r* which, when the bobbin thread is unwound normally, bears upon the tappet *k* of the stop *j* and forces the latter back in such a manner as to free the roller *f* and allow the bobbin thread to unwind freely. The thread leaving the eye *n* passes between two rollers *s* and *t* which are here substituted for the ordinary eye, and facilitate the exit of the weft thread (see Fig. 3).

The operation of this shuttle is as follows:—With the normal delivery, the thread unwinds from the bobbin and its tension is sufficient to maintain the counterweight *o* in the raised position (position shown in Figs. 1 and 4) but as soon as the tension of the un-

wound thread becomes less and its delivery increases, the counterweight *o* drops and stretches the thread of the bobbin tight again. The finger *r* leaves the tappet *k* of the stop *j*, and the latter being pushed by the spring *l*, presses against the roller *f* and thus arrests the unwinding of the thread from the bobbin (position shown in Figs. 2 and 5). The thread *c* then resumes its normal delivery and causes the counterweight *o* to rise again. The finger *r* acts anew upon the tappet *k* of the stop *j* and forces it back (see Fig. 6), and the thread of the bobbin begins again to unwind itself freely. These same phases are repeated each time that the weft thread becomes slack. This is therefore an actual automatic regulator of the tension and delivery of the weft thread, acting directly by the tension of the latter.

The shuttle shown in Fig. 7 is a simplified practical form of the invention. This shuttle is similar in all respects to that which has been hereinbefore described, except that the part *g* comprises here neither the stop *j* nor its tappet, nor the spring *l*. The counterweight *o* is likewise provided with the eye *q*, but its finger *r* is dispensed with. In this arrangement the counterweight acts simply as a tensioning device upon the weft thread *c* that has passed out from the shuttle. In fact when the latter has a too great delivery the counterweight *o* drops and stretches the weft thread tight again, that is to say the latter maintains in all cases a constant and uniform tension.

The operation of the regulator is analogous to that described with reference to the first practical form of the invention; it is illustrated in the sections of Figs. 8 and 9 which show the counterweight in the two positions respectively of the tension and of the slackness of the weft thread.

Having now particularly described the nature of this said invention and the best means I know of carrying the same into practical effect I claim:—

1. In a weaving shuttle for automatically regulating the delivery and tension of the weft thread, the combination of a tension counterweight arranged to oscillate in a plane transverse to the longitudinal axis of the shuttle, said counterweight being provided with an eyelet for the passage of the thread, a friction roller for the thread carried by the shuttle body, and a spring-actuated sliding stop for pressing the thread against the friction roller, said stop being under the control of the counterweight to relieve the thread from pressure against the friction roller.

2. In a weaving shuttle for automatically regulating the delivery and tension of the weft thread, the combination of a tension counterweight arranged to oscillate in a plane transverse to the longitudinal axis of the shuttle, said counterweight being provided with an eyelet for the passage of the thread, a finger carried by said counterweight, a friction roller for the thread carried by the shuttle body, a sliding stop carried by the shuttle body, a spring tending to press the stop against the friction roller, and a tappet on the stop, said tappet being located in position to be engaged by the finger of the counterweight to operate the stop against the action of the spring.

3. In a weaving shuttle for automatically regulating the delivery and tension of the weft thread, the combination of a friction roller carried by the shuttle body, under which the thread passes after leaving the bobbin, a small plate for lightly pressing the thread against the roller, a stationary guide with two lugs for the passage of the thread, a counterweight arranged to oscillate in a plane transverse to the longitudinal axis of the shuttle, said counterweight being provided with an eyelet for the passage of the thread, a sliding stop carried by the shuttle body, a spring acting upon the stop tending to make it press the thread against the roller when the counterweight is in its lower position, a tappet on the stop, a finger on the counterweight co-acting with the tappet when the counterweight is raised to disengage the stop from the roller, and a side wall of the shuttle provided with a hole for the exit of the thread, said hole being provided with a roller on each side thereof.

In testimony, that I claim the foregoing as my invention, I have signed my name in presence of two witnesses, this 15th day of February 1907.

JULES EUGÈNE HAUVETTE.

Witnesses:
EUGÈNE GUYARD,
DEAN B. MASON.